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Curricula vitae of candidates nominated by States Parties for election to the Commission on the Limits of the Continental Shelf

Note by the Secretary-General

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I. Introduction

The Secretary-General has the honour to submit to the Meeting of States Parties the curricula vitae of the candidates nominated by States Parties for the election of 21 members of the Commission on the Limits of the Continental Shelf. A list of the candidates nominated for this election is contained in document SPLOS/80. The procedures to be followed by the Meeting of States Parties are set out in a note by the Secretary-General (SPLOS/79).

II. Curricula vitae of candidates

Hilal Mohamed Sultan Al-Azri (Oman)

Date of birth: 23 November 1954.

Languages: Arabic, French, English, Swahili.

Education

1980	B.Sc., Geology, Université des Sciences et Technologies due Languedoc, Montpellier, France.
1984	M.Sc., Geochemistry, Université d'Orleans, France.
1986	Doctorate (3' cycle), Mineral resource geochemistry and prospecting, Université d'Orleans, France.

Professional experience and activity

1980-1982 Field geologist, Ministry of Petroleum and Minerals. Mapping and exploration (geochemistry) of various minerals.

Six-month intensive training course at the University of Leoben, Austria.

Work on old continental shelf (Permian-Cretaceous) currently exposed in the mountains of Oman.

1987-1995 Ministry of Petroleum and Minerals, Director of Geological Survey. Main duties and objectives of the department are:

- To carry out basic geological studies, prepare geological maps to various scales and prospect for minerals (both metallic and non-metallic) throughout Oman on a regional scale;
- To carry out a geological, airborne geophysical and geochemical survey of potential areas on a regional scale to delimit areas for detailed surveys;
- To publish geological documents (reports, books and other scientific papers);
- To carry out collaborative research projects on Oman's geology and mineral exploration with various foreign universities and organizations, including Oxford, Cambridge, Bern, Monash, Montpellier, Paris, etc.

1999-present Ministry of Commerce and Industry, Director General for Minerals. Main task: responsible for all the activities of the Ministry related to geological surveys and mineral resources. Supervise the work of the five departments under the Directorate General of Minerals, plan and implement studies and programmes for mineral resource exploration. Propose a mineral development strategy and prepare five-year plan projects.

Publications:

More then 10 publications on geology and mineral deposits.

Alexandre Tagore Medeiros de Albuquerque (Brazil)

Date and place of birth: 25 November 1940, Rio de Janeiro Brazil.

Academic background

Degree in Mechanical Sciences at the Course on Machinery of the Brazilian Navy, 1963.

Degree in Portuguese Literature, University of Notre Dame, Rio de Janeiro.

Professional activities

1986-1989:	Under-Secretary of the Inter-ministerial Commission for Marine Resources.
1987 and 1988:	Member of the Brazilian delegation to the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, New York and Kingston.
1986-present:	Coordinator of the Executive Committee on the outer limits of the Brazilian continental shelf.
1991-present:	United Nations consultant on the issue of the outer limits of the continental shelf of coastal States.
1995:	Member of the Brazilian delegation to the first meeting of the Joint Cooperation Commission Brazil/Namibia.
1995:	Participated in New York in the United Nations group of experts that made suggestions related to the establishment of the outer limits of the continental shelf of the coastal States aimed at establishing a modus operandi of the future Commission on the Limits of the Continental Shelf.
1975-present:	Developing activities in the Brazilian Hydrography and Navigation Department.

As a member of the Commission on the Limits of the Continental Shelf:

Member of the following research groups created in 1997 by the Commission in order to elaborate the Commission's Scientific and Technical Guidelines: Hydrography, Geodesy and Outer Edge of the Continental Margin.

Member of the Working Groups on chapters 1, 2, 3, 4 and 5, created in 1998 in order to prepare the draft guidelines.

Chairman of the Working Group on chapter 9 of the guidelines.

Lectures

Carrera, G., and Albuquerque, A., "Information on the outer limits of the extended continental shelf", presented by Galo Carrera at the ABLOS International Conference on Technical Aspects of Maritime Boundary Delineation and

Delimitation, including UNCLOS article 76 issues, held in Monaco on 9 and 10 September 1999.

Carrera, G., and Albuquerque, A., "An outline for the preparation of a national submission to the Commission on the Limits of the Continental Shelf", presented by Galo Carrera in the Open Meeting of the Commission, held in New York on 1 May 2000.

Albuquerque, A., "Foot of the continental slope determined as the point of maximum change in the gradient at its base", presented at the Workshop on the Continental Shelf, held at Buenos Aires from 13 to 17 November 2000.

Albuquerque, A., "Preparation of a submission to the Commission on the Limits of the Continental Shelf", presented at the Workshop on the Continental Shelf held at Buenos Aires from 13 to 17 November 2000.

Publications

In 1991, at the request of the United Nations, elaborated a document on the implementation of article 76 of the United Nations Convention on the Law of the Sea.

In 1993, together with a United Nations group of experts, prepared the document entitled "Definition of the continental shelf: A study on the relevant provisions of the United Nations Convention on the Law of the Sea".

In 1996, at the request of the International Oceanographic Commission/International Hydrological Organization, prepared chapter 6 of the Technical Manual on the external limits of the continental shelf of the Coastal States with regard to the General Bathymetric Data Collection.

Co-author of the paper "LEPLAC: The Brazilian Continental Shelf Project", presented by the Brazilian geologist Marcus Gorini at the Workshop on the Continental Shelf, held at Buenos Aires from 13 to 17 November 2000.

Osvaldo Pedro Astiz (Argentina)

Date and place of birth: 14 November 1940, Buenos Aires.

Language skills: Spanish: native speaker.
English: fluent.
Portuguese, French, Italian: reading knowledge.

Studies, training, experience

Graduated as naval officer (1962); Officer of Command and Staff (1980); Capitán de Navío (Captain) (1987); retired (1992).

Licentiate in Hydrography, Instituto Technológico de Buenos Aires, ITBA, 1971. Complemented with subjects of Licentiate in Physical Oceanography, including marine geophysics and geology.

Participation in hydrographic and oceanographic cruises (eight years) and in planning and management of hydrographic and oceanographic studies (nine years).

Since 1975: Participation in activities related to international boundaries and limits.

Superior Course on Strategy and Course on Futuristics at the Superior School of War of the Army (1986/87).

1990 to 1992: Expert in Technical Aspects of Maritime Limits (International Hydrographic Bureau, IHB).

1994-present: Argentine expert of the intergovernmental oceanographic Commission (IOC) on marine scientific research (art. 2, Annex VIII, UNCLOS).

Professional activities

Current activities

1997-2002: Member (Vice-Chairman) of the Commission on the Limits of the Continental Shelf. Participation in the meetings of the Group of Technical Experts on the definition of the continental shelf (March 1993) and in the Group of Experts on preparations for the establishment of the Commission on the Limits of the Continental Shelf (September 1995), United Nations Headquarters, New York.

1992-present: Coordinator on cartographic/geographic limits and boundary affairs, Ministry of Foreign Affairs, Brazil.

Previous activities

Eleven years on hydrographic and oceanographic ships, first as officer and later as commander. Four years in vessels and on staff of the maritime fleet.

Eleven years in the Naval Hydrographic Service (NHS) in all posts of the departments of Hydrography and Security of Navigation: Technical Secretary, Deputy Chief and Chief of Service (1990).

One year as chief of an Antarctic base. Visited seven Antarctic bases.

Hydrographic and oceanographic surveys in rivers, lakes and in the western South Atlantic off South America to Antarctica.

Direction of hydrographic studies for a gas pipeline project across the eastern end of the Straits of Magellan (1975-1976).

Adviser to the Navy of Bolivia on the hydrographic survey of Lake Titicaca (1975).

Hydrographic studies for a deep-water port: Chief of Operations (1973-1974) and Cabinet Chief (1975-1979).

Expert adviser to the Argentine delegation to the Holy See, until the exchange of ratification documents of the 1984 Treaty on Peace and Friendship, between Argentina and Chile.

Argentine representative to IHB for the new edition of *Limits of Oceans and Seas* (SP 23) (1982-1984).

Representative at the International Maritime Organization, IMO Subcommittee on Security of Navigation (1983-1984).

Argentine member of the Working Group on Geodesy and Geographic Information (WGGGI) of the Scientific Committee on Antarctic Research (SCAR) (1979/1992).

Participation in the project on navigational aids (signals) in the Paraguay and Paraná rivers (Hidrovía) (1995).

Conventions, conferences, meetings

Week on Geography, Córdoba, Argentina (1976). Lecturer on the studies for a pipeline project across the eastern end of the Straits of Magellan.

First United Nations Regional Cartographic Conference for the Americas, Panama (1976).

First National Meeting on Photogrammetry and Related Sciences, Organizing Committee, Buenos Aires (1976).

Second Inter-American Naval Conference on Hydrography, Oceanography and Naval Research, Buenos Aires (1979).

International Geodetic and Geophysical Union Conference, Canberra (1979).

Meetings of WGGGI of SCAR: Canberra (1979), Hobart (1988), Bariloche (1992).

Conference of the Pan-American Institute of Geography and History, Santiago (1982).

Twelfth International Hydrographic Organization (IHO) Assembly, Monaco (1982).

Conference of the Subcommittee on Security of Navigation, IMO, Argentine representative, London (1984).

Eleventh Omega International Technical Conference, Tokyo (1988).

First (1989) and Second (1991) Panel about Antarctic Update. Panellist on cartography and geographic place names and on services for Antarctic activities. Argentine Council for International Relations (CARI), Buenos Aires.

Fifteenth Antarctic Treaty Consultative Meeting, Paris (1989).

United States Hydrographic Conference '90. Norfolk, Virginia (1990).

"The Antarctic Treaty System". Lecture delivered at School of Philosophy (Geography), University of Buenos Aires (1990).

First meeting of the Group of Experts on Antarctic Environmental Monitoring (observer), Buenos Aires (1992).

Twenty-second meeting of delegates to SCAR (member of delegation), Bariloche, Argentina (1992).

Member of the Argentine delegation at the preparatory meetings with Chile of the Working Groups on Shared Water Resources and on Air and Maritime Navigation, Santiago (1996). Participation at the meetings of the Group (1996-1998).

Panel on "Judicial settlement of disputes between States", Prof. Bardonnet, Buenos Aires (26 August 1996).

Sixth Meeting of States Parties to UNCLOS, March 1997. Member of the Argentine delegation.

Participation at all the nine sessions of the Commission on the Limits of the Continental Shelf from its establishment to the present.

Open session of the Commission on the Limits of the Continental Shelf, 1 May 2000, United Nations Headquarters Presenter.

Workshop: Continental Shelf — Buenos Aires 2000, 13-15 November 2000. Lecturer on "The United Nations Convention on the Law of the Sea and the Outer Limits of the Continental Shelf".

Invited lecturer on "Some aspects of the Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf". Rio de Janeiro, Brazil, 20 November 2000.

Lecturer on "The Argentine continental shelf, article 76 of the Convention and the Scientific and Technical Guidelines of the Commission", National Academy of Geography, Buenos Aires, 22 June 2001.

National Conference on Geography, Puerto Madryn, Argentina, 19-23 September 2001. Invited lecturer on "The Argentine continental shelf and its challenges".

Decorations, associations and organizations

Knight Commander of the Order of Saint Gregory The Great (civilian class), awarded by His Holiness, John Paul II (1985).

Member of the Committee on Antarctic Studies (since 1988) and of the International Law Institute (since 1995) of CARI.

Member of the Argentine Academy of the Sea since 24 June 1997.

Teaching experience, studies, advice and publications

Full Professor (1976-1980). Instruments for Hydrography, Hydrography and Hydrographic Projects, at ITBA, Licentiate in Hydrography.

Professor of Oceanography at the National Nautical School (1977).

Several lectures on boundaries, limits, geographic affairs and maritime spaces.

Preparation of technical aspects of Argentine law on baselines and maritime space (1975-1991).

"Operaciones en Playas" (Shore Operations), technical publication of NHS (1973).

Adviser on maritime limits for the Guinea-Bissau/Senegal arbitration (1989).

Argentine contribution to translation into Spanish of the *Hydrographic Dictionary* (1976-1978) and for updating "Limits of Oceans and Seas" (1982-1990), of IHB.

***Antártida al Iniciarse la Década de 1990.* Author of the chapter entitled "Cartography and Toponymy", CARI (1992).**

Consultant on topography, hydrography, oceanography and preservation of the environment for the treatment of sewer effluents (1992).

***Specifications for Topographic Surveys,* co-author. Federal Council for Freshwater and Drainage (1992).**

Preparation of the regulation on the education, training and certification of merchant navy personnel (1992).

"La Cartografía en la Antártida", co-author, Boletín No. 2/92 of the Centro Argentino de Cartografía (1992).

***Antártida y el Sistema del Tratado Antártico,* co-author, CARI (1996).**

"Plataforma Continental — La Determinación del Límite Exterior" (Continental Shelf — The Establishment of the Outer Limit), chapter of the book entitled *El Nuevo Derecho del Mar* (The New Law of the Sea), Institute of International Law, CARI (1997).

"La Argentina, la Antártida y el Sistema del Tratado Antártico" (Argentina, the Antarctic and the Antarctic Treaty System). Basic information document for the educational area, produced by the Antarctic Studies Committee, CARI. Co-author (1999).

Lawrence Folajimi Awosika (Nigeria)

Date and place of birth: 27 July 1949, Ondo, Ondo State, Nigeria.

Occupational objectives

A professional position of challenge where my knowledge in oceanography, marine geology/geophysics, hydrography, land-ocean interactions, coastal and marine management in general and project management can be fully utilized.

Education

1974-1977	Howard University, Washington, D.C., B.Sc., Geology (cum laude).
1978-1980	George Washington University, Washington, D.C., M.Sc., Geology, 1980. Emphasis: Geophysics, sedimentology, stratigraphy, field geology and geochemistry.

Research

Seismic and gravity survey of Triassic sediments in Arcola Quadrangle, Virginia, United States of America.

Thesis: "Magnetic Survey of Basalt Flows in Remington Quadrangle, Virginia.

Postgraduate training

Diploma, Marine Geophysics, Spanish Institute for Oceanography, Fuengirola, Malaga, Spain. June-October 1985.

Course on Ocean Waves and Tides, International Centre for Theoretical Physics, Trieste, Italy. September-October 1988.

Seventh Sea level Training Course, Proudman Oceanographic Laboratory, Merseyside Bidston, United Kingdom. June 1989. Course organized by the Intergovernmental Oceanographic Commission (IOC) of UNESCO for Global Sea Level Observing System (GLOSS).

Five-month work study at Department of Oceanography, University of Southampton, United Kingdom, October 1990-March 1991, on "Sediment transport dynamics of the western Nigerian continental shelf".

Affiliations

American Geophysical Union.

Association of American Petroleum Geologists.

Nigerian Association of Petroleum Explorationists.

Geological Society of Nigeria.

Association of Oceanographers.

Nigerian Association of Oceanographers.

International Coastal and Ocean Organization.

Employment chronology

Howard University, Washington, D.C., January 1976-April 1977. Graduate Assistant (Sedimentation and Physical Geology).

University of Maryland, College Park, Maryland, December 1977-April 1978. Laboratory instructor, Physical Geology.

Howard University, Washington, D.C., August 1980-December 1981. Lecturer, Geophysics and Environmental Geology.

Nigerian Institute for Oceanography and Marine Research (NIOMR), Victoria Island Lagos, March 1983 to present. Chief Research Officer.

Current responsibilities

Project leader: Geological/geophysical survey of the Nigerian Continental Margin. Project leader: (1) Heavy mineral provenance of the Niger/Benue catchment basin and beach sediments along the Nigeria coastline (1983 to 1985).

Project leader: Offshore canyons, Possible importance on erosion along the western Nigerian coastline. Project involves: Bathymetric charting of the canyons, Current metering, sedimentological and mineralogical studies, shallow seismic and side scan and general hydrodynamic of shelf.

Project leader: Beach erosion, coastal zone management and ocean dynamics studies (Assistant project leader 1983 to 1990, Project leader 1990 to present).

Project leader: Geology and general oceanography of coastal Lagoons (Lagos and Lekki lagoons)

Project leader: Global climate change and sea level rise studies in Nigeria.

Contact person and officer in charge of Global Sea Level Observing System (GLOSS) tide gauge in Nigeria as well as NOAA (National Oceanographic and Atmospheric Administration of the United States of America) Next Generation Water Level Measuring System (Tide Gauge) in Nigeria.

Project leader: Video mapping of the entire Nigerian coastline for the assessment of impacts of 1m sea level rise on the Nigeria coastline. Collaborative project between NIOMR and the Centre for Coastal Research of the University of Maryland, College Park, United States of America.

National Coordinator, COMARAF (Regional Project for Training and Research of African Coastal Systems).

Project leader: IOC/FAO/UNEP project — Study of physical/geological oceanographic aspects affecting transport and dispersion of pollutants in Lagos Lagoon, Nigeria.

Participating geophysicist in African Mapping Project (AMMP) in collaboration with Paterson, Grant and Watson, Ltd., of Canada, International Institute of Aerospace and Earth Sciences, Delft, The Netherlands (ITC) and the University of Leeds, United Kingdom (ULIS).

Principal scientist in charge of Shipboard Environmental Acquisition System (SEAS III) in the south Atlantic. A NOAA International project in support of the World Ocean Climate experiment — WOCE.

Project leader and coordinator: Study of drainage systems in Lagos and Victoria Island and effects of sea level changes. A project funded by the Coast and Small Island Division UNESCO Paris 1998-1999

Member — Interministerial Committee on the final solution to the erosion problem on the Bar Beach, Lagos

Part time Lecturer of Marine Geology/Oceanography — University of Lagos Akoka, Lagos — Department of Marine Sciences (August 1996 to present)

International assignments undertaken for United Nations agencies and other international organizations

Intergovernmental Oceanographic Commission (IOC) of UNESCO Paris. Consultant to IOC during the IOC/FAO/UNEP workshop on qualitative assessment of pollution in the West and Central African Region (WACAF 11 Phase 2). Lectured participants and conducted field demonstration on Physical aspects of transport and dispersal of pollutants in the coastal and marine environment. Calabar, 19 to 23, 1991.

IOC Consultancy Mission to Nigeria, Benin, Ghana, Côte d'Ivoire, and Senegal, July to September 1992, in respect of:

> Training of regional scientists and calibration of equipment for the IOC/FAO/UNEP WACAF 2 PHASE 2 Project-Study of Physical Oceanographic factors responsible for transport and dispersion of pollutant in coastal waters.
>
> To facilitate progress in the analysis of data collected during the First IOCEA cruise in the Gulf of Guinea.

ROPME/IOC/NOAA 100 cruise in the Persian Gulf (ROPME Sea Area) to assess the impacts of the Gulf war on the marine environment. IOC consultant on board NOAA R/V Mt. Mitchell, Leg VIA. 20 May to 30 June 1992, Kuwait to Abu Dhabi.

Member of UN Law of the Sea Office group of technical experts on the definition of continental shelf, Law of the Sea office, United Nations, New York, New York 1993-96.

IOC mission to Mombassa Kenya to lecture on the oceanographic survey techniques applied to acquisition of marine environmental data during the UNEP/FAO/IOC/IUCN workshop on EAF/5: Integrated coastal zone management workshop for the eastern Africa, 5-23 July 1994.

UNEP/FAO/IOC/IUCN mission to Kenya, Tanzania, Zanzibar, Seychelles, Madagascar, La-Reunion, Mauritius, Comoro and Mozambique to assess national capabilities for the implementation of EAF/5: Integrated coastal zone management workshop for eastern Africa. 13 Nov. 1993 30 Jan. 1994.

Member IOC Editorial Board for the International Bathymetric Map of the Central Eastern Atlantic (IBCEA) 1989-present.

Member United Nations Group of Experts on the Scientific Aspects of the Marine Environmental Protection (GESAMP) working group 30 on impacts of Anthropogenically mobilized sediments in coastal areas (1992-present).

Member UNEP Task Team on Global Climate Change and impacts on the West and Central African Region (1990-present).

Intergovernmental Oceanographic Commission Committee of the East Central Atlantic (IOCEA) Regional Coordinator for Global Level of the Sea Surface (GLOSS) 1993-present.

Consultant to FAO on Integrated Coastal Area Management (ICAM) project for the Gambia — Project WACAF 11 for FAO/UNEP (1995-present).

Member of Scientific Steering Committee for Land Ocean Interaction in the Coastal Zone (LOICZ) of the International Geosphere Biosphere Programme (IGBP) 1996-2001.

Member IOC ad hoc committee on DOSS II (1995-present)

Member — Lead author: African region special report on the Regional Impacts of Climate Change for the Intergovernmental Panel on Climate Change (IPCC) 1997.

IOCEA (Western African region) regional coordinator for IODE (International Oceanographic data exchange) of IOC (1997-present).

Member of the Inter-Governmental Panel on Climate Change (IPCC) working group on the second assessment.

Member of advisory board on Marine Natural Resources Management of ACOPS (Advisory Committee on Protection of the Sea) 1997-present.

Elected member and Vice Chairman of the UNCLOS (United Nations Convention on the Law of the Sea) Commission on the Limits of the Continental Shelf (CLCS) 1997-2002.

Member of the UNEP group of experts on the development of a GEF project for a Global International Waters Assessment (GIWA) 1997.

Member Intergovernmental Oceanographic Commission (IOC) group of experts on GOOS (Global Ocean Observing System) Coastal Module.

United Nations designated expert to the Group of Experts on the Scientific Aspect of the Marine Environment Protection (GESAMP). Also member of the Working Group on Marine Environment Assessment of GESAMP.

Member of Joint IOC/SCOR/SCOPE assessment of the State of Marine Science and its Contribution to Sustainable Development.

Member United Nations Environment Programme (UNEP) group of experts on the revitalization of Abidjan and Nairobi Conventions.

Participating Scientist — Synthesis and Upscaling of Sea level Rise Vulnerability Assessment Studies (SURVAS) Project funded by European Union. International Project Office — Middlesex University, Enfield, United Kingdom.

Member of Working Group on the Development of Methodology for the implementation of the Global International Waters Assessment (GIWA).

Nigerian National Coordinator: Global Environmental Facility Medium Sized Sub Sahara African Project on Development and Protection of the Coastal and Marine Environment in Sub Sahara Africa.

National Coordinator: Oceanographic Data and Information in Africa (ODINAFRICA).

Head Intergovernmental Oceanographic Commission of the Central Eastern Atlantic (IOCEA-UNESCO) Project Office Lagos.

International oceanographic research cruises

Participated in a multidisciplinary research cruise on board R/V CORNIDE SAVEDRA in the Balearic continental shelf western Mediterranean code named GEOCARBAL 85 (12 May to 10 June 1985). Objective of cruise was to establish the bio-sedimentological and geophysical models of the Balearic shelf using 3.5 khz seismic and side scan.

Participated in the cruise Gravity survey of the Gulf of Guinea shelf on board R/V STARELLA 24 September to 6 October 1987. A United States of America/Nigeria Collaborative project funded by the U.S. Government.

Cruise Leader: First Intergovernmental Oceanographic Commission (IOC) of UNESCO cruise in the Gulf of Guinea, on board NIOMR R/V SARKIM BAKA, 10-25 Oct. 1989. Objectives of cruise was to collect hydrodynamic and marine geological data affecting coastal erosion in the west and Central African Region. Report of cruise and analysis of data already submitted to IOC.

Intergovernmental Oceanographic Commission/National Oceanic and Atmospheric Administration of the United States of America/Regional Ocean for the Protection of the Marine Environment of the Persian Gulf (IOC/NOAA/ROPME) 100 day cruise in the Persian Gulf to assess the impacts of the Gulf war on the marine environment of the Gulf onboard NOAA's R/V MT. MITCHEL. Participated as IOC consultant on leg six, 20 to 30 May 1992.

Cruise leader on a total of eight sea cruises since 1984 in the Nigerian continental shelf on board NIOMR's R/V OKION and SARKIM BAKA.

Publications

Awosika, L. F., (1980). Magnetic survey of Jurassic Basalt flows in the Northwest portion of the Remington 7 ½ minute Quadrangle in Fauquier Culpeper counties Virginia. GEOLOGOS VI No 1, Published by the Department of geology and Geography, Howard University Washington D.C. pp 37-64.

Ibe, A. C., Awosika, L. F., Antia, E. A., (1984a). Progress report No 2. Coastal erosion research programme. Work accomplished in 1983. NIOMR Special Pub. 106p.

Ibe, A. C., Awosika, L. F., (1986a). Sedimentology of beaches of barrier bar complexes in Nigeria. NIOMR Tech. Paper No.28.

Ibe, A. C., Awosika, L. F., Ihenyen, A. E., Tiamiyu, A. I., (1986b). The erosion problem at Victoria Island, Lagos (1900 to present) and its solution. In Proc. National Seminar on flooding and erosion along the Nigerian and similar coastlines. University of Lagos, May 1986. Contribution No 6.

Awosika, L. F. and Akpati, B. N., (1988). Grain size and heavy mineral provenance of the Niger/Benue drainage basin and other river basins in Nigeria. NIOMR Tech. Paper No.32.

Awosika, L. F., (1988). Bathymetric and Geomorphic features of the western Nigerian Continental shelf. In Proc. Joint Oceanographic Assembly 1988, Acapulco Mexico.

Ibe, A. C., Awosika, L. F., Ihenyen, A. E. and Ibe, C. E., (1989). Erosion management strategies for the Mahin mud beach, Ondo state, Nigeria. In proc. Coastal Zone '89. American Society of Civil Engineers, pp.1740-1754.

Ibe, A. C., Awosika, L. F., Ihenyen, A. E., Tiamiyu, A. I. and Ibe, C. E., (1989). A study of currents and possible scouring effects at a proposed Oil well location in the Cross river Estuary, Nigeria. Geomorphology and Geoecology. Second International Conference on Geomorphology, Sept. 3-9, 1989.

Ibe, A. C., Ajao, E. A., Oyewo, E. O., Awosika, L. F., Ihenyen, A. E., Tiamiyu, A. I., Ibe, C. E., Inegbedion, L.E. and Adekanye, J. E. (1989). Physico-chemical parameters and dynamics of the ocean off Lagos. Cruises 1, 2, and 3. A special report for the Nigerian Navy, 38p.

Awosika, L. F., Ihenyen, A. E. and Tiamiyu, A. I. (1989). Marine Geology of Lekki lagoon, Nigeria. A report for COMARAF project.

Awosika, L. F. and Ibe, A. C. (1989). Results of Recent Marine Related Projects in Nigeria including those executed with Remote Sensing Technology as a tool. In Proc. United Nations meeting of Experts on Remote Sensing Meteorology-Applications to resources and Coastal Management. Mas Palmas, Canary Islands, Spain. 8-12 May 1989.

Awosika, L. F., Ibe ,A.C., Ibe, C.E., and Inegbedion, L. E., (1989a). Causes of coastal erosion along the Nigerian coastline. In proc. Conference on flood and drainage,University of Ibadan, Nigeria. Aug. 15-18. 1989.

Awosika, L. F., Ibe, A. C., Ibe, C. E. and Inegbedion, L. E., (1989b). Coastal erosion in Nigeria: Causes, effects and solutions. In proc. on the relationship between oil companies and the public, sponsored by Gulf Oil Company Nigeria Ltd., NNPC, and the University of Benin. Petroleum Training Institute, Warri, Nigeria. Aug 6-8, 1989.

Ibe, A. C., Awosika, L. F., (1989). National assessment of the effects of sea level rise on the Nigerian Coastal Zone. In Proc. International Conference on Global Climate Change at the Center for Climate Change, University of Maryland, U.S.A. 9-23 Sept. 1989.

Awosika, L. F., Ibe, A. C. and Udo-Aka, M. A., (1989). Impacts of sea level rise on the Nigerian Coastline. In Proc. Changing Climate and the Coast. IPCC conference on Adaptive Responses to sea level rise and other impacts of Global climate change, Miami, 27 Nov - 1 Dec., 1989. Vol. 2 pp 49-66.

Awosika, L. F., (1989). Coastal Geomorphology and effects of sea level rise on the West and Central African Region (WACAF). UNEP Task Team on impacts of Global Climate Change on the WACAF region. UNEP (OCA/PAC)WG.6/INFO.16.

Awosika, L. F., (1990). Coral Bank obstruction to trawling in the middle to outer continental shelf east and west of Lagos, Nigeria. NIOMR Pub. No 57, 13p.

Ibe, A. C., Awosika, L. F., Ibe, C. E. and Inegbedion, L. E., (1991). Monitoring of the 1985/86 Beach Nourishment Project at Bar Beach, Victoria Island, Lagos, Nigeria. In Proc.Coastal Zone '91. American Association of Civil Engineers. pp.534-552.

Awosika, L. F., Ibe, A. C., Ibe, C. E. and Inegbedion, L. E. (1991). Geomorphology of the Lekki lagoon barrier coastline in Nigeria and its vulnerability to rising sea level. In Pro. Coastal Zone '91. American Society of Civil Engineers, pp.2380-2393.

Awosika, L. F., (1991a). Geology, Hydrography, coastal erosion and settlement planning in relation to Fishery development in the Niger delta. In Proc.International Fund for Agricultural development course on Niger delta Fishery development Nov. 11, 1991, Uyo, Akwa Ibom.

Awosika, L. F., (1991b). Offshore Avon Canyon west of the Niger delta: Sedimentary Processes and possible implications for Hydrocarbon Entrapment: In Proceeding Nigerian Association of Petroleum Explorationist 9th Annual Conference, Nov. 20 to 22, 1991.

Awosika, L. F., Gregory T. French; Robert J. Nicholls and Ibe, C. E., (1992). The Impacts of Sea Level Rise on the Coastline of Nigeria: In Proc. IPCC Symposium on the Rising Challenges of the Sea. Margaritta, Venezuela 14 - 19 March, 1992.

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Consultancies

Ibe, A. C., Awosika, L. F., Ihenyen, A. E., Ibe, C. E., Tiamiyu, A. I., Okonya, E. C. and Orekoya, T. (1985b). A study of current and scouring effects at proposed Davy Bank "A" Location in OML 14". A consultancy report for Shell Petroleum Development Corporation, Nigeria, 64p + charts.

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Ibe, A. C., Awosika, L. F., Ihenyen, A. E., Inegbedion, L. E., Adekanye, J. E., (1988). Bathymetric survey and Hydraulic studies of the nearshore zone at Ajegunle, Orokin, Ogungbeje and Ago Nati, Ondo state Nigeria. A consultancy report for Adeyemi Olubowale and Partners Ibadan Nigeria. 19p.

Ibe, A. C., Ajao, E. A., Oyewo, E. O., Awosika, L. F., Ihenyen, A. E., Tiamiyu, A. I., Ibe, C. E., Inegbedion, L.E. and Adekanye, J. E. (1989). Physico-chemical parameters and dynamics of the ocean off Lagos. Cruises 1, 2, and 3. A special report for the Nigerian Navy, 38p.

Ibe, A. C., Awosika, L. F., Ihenyen, A. E., Ibe, C. E., Inegbedion, L. E., and Adekanye, J. E. (1989a). Feasibility studies and preliminary engineering design for coastal erosion control works at Ugborodo, Bendel state, Nigeria. (Previous work). A consultancy report No.1 for Oluonye and Partners, Lagos. 28p.

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Ibe, A. C., Awosika, L. F., Ibe, C. E., and Inegbedion, L. E., (1990). Hydrographic and Topographic survey of the Rogersville Resort Centre in Lekki, Lagos State, Nigeria. A Consultancy report for Rogersville and Brothers Nigeria.

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Awosika, L. F., et al 1992. Hydrographic and geophysical survey of Escravos river crossing by pass pipeline in Delta state Nigeria. A consultancy for Zenith Niger group Company limited for the Nigerian National Petroleum Corporation 1992.

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Awosika L. F., Dublin Green, Folorunsho, R . et al (2000b). Oceanographic data and information on the Commodore Channel Lagos. A consultancy report for Nigerian West Minster Dredging and Marine Limited.

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Dublin-Green, C. O., Awosika, L. F., Folorunsho, R., Adekanmbi, A., Adekoya, A , Unyimadu, J.P., Eyewo, E.O. (2001). Nigeria CPTS: Shallow Water Current Measurement. A report of field work conducted by NIOMR.

Awosika, L. F., Dublin-Green C. O. Folorunsho, R. Oyewo, E. O. (2001) Inventory of gauges and other oceanographic equipment.

Have travelled far and wide in Africa as well as other parts of the world.

Languages

English: very proficient.

French: slight knowledge.

Spanish: slight knowledge.

Samuel Sona Betah (Cameroon)

Date and place of birth: 1 October 1945, Bai Sombe, South-West Province, Cameroon

Education

1966-1971	**M.Sc. in Geology, Moscow State Geological Exploration Institute, Moscow.**
1974-1975	**Postgraduate Certificate in Hydrogeology, Amsterdam Free University, Netherlands.**

Professional training

1994	**Regional leadership course on marine and ocean affairs in Africa, Economic Commission for Africa (ECA), Addis Ababa.**
1986	**Course in Public Management, Higher Institute of Public Management, Yaoundé.**
1985	**Economy and mineral strategy seminar, Ecole des Mines de Paris.**
1984	**UNITAR regional training and refresher course on international law in Africa and the law of the sea; International Relations Institute of Cameroon, Yaoundé.**
1980	**Law of the Sea and Management of Marine Resources; International Ocean Institute, Malta.**
1978	**Advanced course on Schlumberger log interpretation, Elf Petroleum Training Centre, Port Gentil, Gabon.**

Language skills

Write and speak English and French fluently. Also write and speak Russian.

Computer skills

MS DOS, MS Word, Windows 98, etc.

Employment record

28 March 1972-present	**Employed by the Ministry of Mines and Power as Engineer of Mines and Geology. Currently Senior Engineer of Mines and Geology.**

Previous positions

1987-2000	**Director of Geology.**
1979-1987	**Sub-Director of Geology.**
1977-1979	**Chief of Service for Exploration of Hydrocarbons.**
1975-1977	**Assistant Chief of Hydrogeological Service; cumulatively Hydrogeologist of UNDP Groundwater Exploration Project in North Cameroon.**

Work experience

Seabed manganese nodules prospecting and exploration (United Nations Division for Ocean Affairs and the Law of the Sea, New York).

Solid mineral prospecting and exploration in Cameroon: lateritic nickel and cobalt, gold, diamonds (placer), uranium, rutile, bauxite, iron.

Hydrocarbon exploration: sedimentary geology and seismic interpretation, oil-well logging in Rio del Rey and Douala basin.

Environmental studies relating particularly to natural hazards: lethal gas explosions in Lakes Nyos and Monoun, landslides, etc.

Hydrogeology: groundwater exploration and exploitation in North Cameroon.

Board memberships

2000-present	Chairman of Special Public Tenders Board of the Geological and Mining Research Institute, Yaoundé.
1994-1999	Member of the Board of Société d'Exploitation de Rutile d'Akonolinga (SERAK).
1984-1989	Member of Société Anonyme de Broyage de Minerais du Cameroun (SABM).
	Membership of UNCLOS technical bodies.
12 November 1999	Member of the Advisory Board on Hydrographic, Geodetic and Marine Geo-scientific Aspects of the Law of the Sea (ABLOS), representing the interests of the Intergovernmental Oceanographic Commission (IOC/UNESCO).
1997-2002	Member of the Commission on the Limits of the Continental Shelf (United Nations Headquarters, New York).
August 1996-present	Member of the Legal and Technical Commission of the International Seabed Authority, Kingston, Jamaica.
1987-1994	Member of the Group of Technical Experts of the Preparatory Commission for the International Seabed Authority and for the International Tribunal on the Law of the Sea, member of the Training Panel of the Commission.

UNCLOS meetings attended

October 2001	ABLOS International Conference on Accuracies and Uncertainties in Maritime Boundaries and Outer Limits, Monaco.
September 1999	ABLOS International Conference on Technical Aspects of Maritime Boundary Delineation and Delimitation, Monaco.

June 1998	Workshop to develop guidelines for the protection of the marine environmental impacts arising from the exploration of polymetallic nodules from the deep seabed area, Sanya, China.
1994-present	Member of the delegation of Cameroon to the Assembly of the International Seabed Authority.
1983-1994	Member of the delegation of Cameroon to the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea; participated in the work of Subcommission III (draft mining code).
November 1985	Intergovernmental Meeting of Experts on aspects of exploration and exploitation of seabed resources in the context of UNCLOS, ECA, Addis Ababa.

Other international meetings attended

June 1992	United Nations Conference on Environment and Development, Rio de Janeiro, Brazil.
April 1983	International Conference on the Proterozoic, Lusaka.

Attended International geological congresses in France, Canada and the United States of America, etc.

Affiliations

International Marine Minerals Society.

Cameroon Society of Earth Scientists.

Cameroon Society of Engineers.

Geological Society of Cameroon.

Publications

The new international economic order and the law of the sea: management of marine resources in the exclusive economic zone", IOI Occasional Papers, No. 8, Halifax, Nova Scotia, 3 March 1981.

Geological Structure of the Upper Udinsk Mineral Region and Preliminary Exploration of the Avril Mercury Prospect (MGI, Moscow, 1971).

"Groundwater Exploration in North Cameroon", September 1977, UNDP project, Garoua.

"The importance of the geological sciences within the Cameroonian framework" *Cameroon geoscience news*, Geological Society of Cameroon, December 1998.

Volunteer activities

1994-2001	President of the Solidarity Fund of the staff of the Ministry of Mines, Water and Energy.

Harald Brekke (Norway)

Date and place of birth: 22 May 1953, Vik in Sogn, Norway.

Education

1978-1983	University of Bergen, Norway — Cand. Real degree (Masters/Ph.D. equivalent) in geology of hard rocks.
1975-1977	Agder Regional College, Kristiansand, Norway. Additional exams in mathematics, statistics and computer programming as well as exams in philosophy and physics.
1973-1975	Agder Regional College, Kristiansand, Norway. College degree in analytical chemistry.

Employment record

1973	Teacher of mathematics and physical education at Chongwe Secondary School, Zambia.
1975	Teacher of chemistry at Agder Regional College, Norway.
1980-1983	Part-time research assistant at the Geological Institute, University of Bergen, Norway.
1983-1984	Full-time research assistant at the Geological Institute, University of Bergen, Norway.
1984-	Senior geologist in the Exploration Department in the Norwegian Petroleum Directorate (NPD), Stavanger, Norway, with the following areas of responsibility:

- Geological/geophysical mapping of the Norwegian continental shelf
- Petroleum resource assessment on regional and national scale
- Planning and development of resource assessment methods and tools
- Evaluation of company applications for new exploration licences
- Providing technical advice to Ministry of Industry and Energy
- Represented NPD in various geoscientific programmes involving universities and industry
- Project coordination
- External lectures on the geology and prospectivity of the Norwegian continental shelf
- Adviser to the Namibian State Oil Company (NAMCOR) under the Norwegian foreign aid programme

1996	**Technical advisor to the Norwegian Government on the delineation of the Norwegian continental shelf.**
2000	**Member of the national committee on the delineation of the continental shelf of Norway.**
2001	**Scientist in charge on seismic ice-breaker cruise in the Arctic Ocean.**

Miscellaneous qualifications

1983	**Qualified as university lecturer in geology upon appointment by university commission set up by the Rogaland College, Norway.**
1990	**Regular scientific referee to the international journal of the Norwegian Geological Society (*Norsk Geologisk Tidsskrift*)**
1994	**Appointed external examiner at the Institute of Geology and Mineral Resources Engineering, Norwegian Institute of Technology, University of Trondheim, Norway.**
2001	**President of the Geological Society of Norway.**

Law of the Sea record

1995	**Member of the Group of Experts convened in September 1995 by the United Nations Secretariat to prepare for the establishment of the Commission on the Limits of the Continental Shelf. Member of the core group within the Group of Experts that worked out a draft for a list of scientific documentation required for making claims for the outer limits of the continental shelf.**
1997-2002	**Member of the sitting Commission on the Limits of the Continental Shelf, elected by the Sixth Meeting of States Parties to the 1982 United Nations Convention on the Law of the Sea (UNCLOS) in New York, 13 March 1997.**
1997-2002	**As member of the Commission assumed the following responsibilities:** **Chaired one of six working groups set up to formulate the Scientific and Technical Guidelines of the Commission.** **Chaired the working group that drew up the final chapter on the delineation of the outer limits of the continental shelf based on sediment thickness.** **Chaired the working group that drew up the final plan for a five-day training course to assist States in preparing their submissions to the Commission.** **Prepared and presented the introductory lecture on UNCLOS and article 76 at the Open Meeting of the Commission in New York in May 2000.** **Contributed actively in other working groups within the Commission.** **Provide technical assistance to the Republic of Seychelles.**

1997-2002	Presented various lectures on continental shelf issues, including:

A lecture on statistical uncertainty as regards the exact position of the outer limits of the continental shelf, held at the International Conference on Technical Aspects of Maritime Boundary Delineation and Delimitation arranged by the International Hydrographic Organization in Monaco in 1999. Mr. Brekke was one of five members of the Commission who presented lectures at the conference.

A lecture on the role of the Commission at the open Conference on the Continental Shelf and its Resources, arranged by the new Law of the Sea Institute in Reykjavik in October 2000.

A lecture on questions related to the provisions on the delineation of the outer limits of the continental shelf based on sediment thickness at the international Continental Shelf Seminar 2000 arranged in Buenos Aires in November 2000 by the Argentine national committee for the delineation of the continental shelf.

Invited as guest lecturer to a course on the continental shelf at the Southampton Oceanography Centre, March 2001. The first course of its kind to be arranged in accordance with CLCS/24/Corr.1.

Invited as guest lecturer to the Regional Training Workshop on the Delineation of the Outer Limits of the Continental Shelf, to be held in Malaysia in 2002.

List of publications

-Brekke, H. 2000. *The tectonic evolution of the Norwegian Sea Continental Margin with emphasis on the Vøring and Møre Basins.* In: A. Nottvedt et al. (Editors), Dynamics of the Norwegian Margin. Geological Society, London, Special Publications, 167: 327-378.

-Brekke, H. & Riis, F. 1987. *Tectonics and basin evolution of the Norwegian shelf between 62 N and 72 N.* Norsk Geologisk Tidsskrift, vol 67, 295 - 322.

-Brekke, H. & Solberg, P. O. 1987. *The Geology of Atløy, Sunnfjord, western Norway.* Norges geologiske undersøkelse Bulletin, vol 410, 73 -94.

-Brekke, H. and Kalheim, J.E 1996. *The NPD Assessment of the Undiscovered Resources of the Norwegian Continental Shelf - Background and Methods.* In Dore, T. (Ed). *Quantification and Prediction of Hydrocarbon Resources.* Norwegian Petroleum Society, Special Publication No 6. Amsterdam, Elsevier, 91-104.

-Brekke, H., Furnes, H., Nordås, J. and Hertogen, J. 1984. *Lower Palaeozoic convergent plate margin volcanism on Bømlo, SW Norway, and its bearing on the tectonic environments of the Norwegian Caledonides.* J. Geol. Soc. London, vol 141, 1015 - 1032.

-Brekke, H., Kalheim, J.E., Riis, F., Egeland, B., Blystad, P., Johnsen, S. and Ragnhildstveit, J. 1992. *Two-way time map of the unconformity at the base of the Upper Jurassic (north of 69 °N) and the unconformity at the base of the Cretaceous (south of 69 °N), offshore Norway, including the main geological trends onshore.* Scale 1:2 mill. NPD Continental Shelf Map No. 1. The Norwegian Petroleum Directorate/The Geological Survey of Norway.

-Brekke, H., Amaliksen, K.G., Færseth, R.B., Jorde, K., Naterstad, J., Nilsen, E., Nordås, J., Ragnhildstveit, J. and Ree, R. 1993. *Bømlo bedrock map 1114 2, 1:50 000, black and white edition.* Geological Survey of Norway.

-Brekke, H., Dahlgren, S., Nyland, B. and Magnus, C. 1999. *The prospectivity of the Vøring and Møre basins on the Norwegian Sea continental margin.* In: A. J. Fleet and S. A. R. Boldy (Editors), Petroleum Geology of Northwest Europe: Proceedings of the 5th Conference. Geological Society, London, 261-274.

-Brekke, H., Sjulstad, H. I., Magnus, C. and Williams, R. W. 2001. *Sedimentary environments offshore Norway – an overview.* In: O.J. Martinsen and T. Dreyer (Editors), Sedimentary Environments Offshore Norway – Palaeozoic to Recent. NPF Special Publication No 10, Elsevier, Amsterdam, 7-37.

-Andersen, T. B., Furnes, H., Brekke, H., Sturt, B. A. and Naterstad, J. 1984. *The Tørvikbygd Ophiolite - a newly discovered ophiolite fragment with an unconformable cover sequence in the central Hardanger area, West Norway.* Norsk Geologisk Tidsskrift, vol 64, 69 - 73.

-Blystad, P, Brekke, H, Færseth, R.B, Larsen, B.T., Skogseid, J. and Tørudbakken, B. 1995. *Structural elements of the Norwegian Continental Shelf. Part II: The Norwegian Sea Region.* NPD-Bulletin No. 8. The Norwegian Petroleum Directorate.

-Eidvin, T., Brekke, H., Riis, F. and Renshaw, D. K. 1998.*Neogene and Upper Paleogene Stratigraphy on the Mid-Norwegian Continental Shelf.* Norsk Geologisk Tidsskrift vol. 78, 125-151.

- Eidvin, T., Jansen, E., Rundberg, Y., Brekke, H. and Grogan, P. 2000. *The upper Cainozoic of the Norwegian continental shelf correlated with the deep sea record of the Norwegian Sea and the North Atlantic.* Marine and Petroleum Geology, 17: 579-600.

-Furnes, H,. Brekke, H., Nordås, J. and Hertogen, J. 1986. *Lower Palaeozoic convergent plate margin volcanism on Bømlo, SW Norwegian Caledonides. Geochemistry and petrogenesis.* Geol. Mag. vol 123, 123 - 142.

-Kalheim, J.E. and Brekke, H 1996. *The Usefulness of Resource Analysis in National Economic Planning - Examples From the Norwegian Shelf.* In Dore, T.(Ed). *Quantification and Prediction of Hydrocarbon Resources.* Norwegian Petroleum Society, Special Publication No 6, Amsterdam, Elsevier, 313-324.

-Larsen, R.M., Brekke, H., Larsen, B.T. and Talleraas, E. (Editors), 1992. *Structural and Tectonic Modelling and its Application in Petroleum Geology.* Norwegian Petroleum Society, Special Publication No. 1. Amsterdam, Elsevier, pp 549.

-Nordås, J., Amaliksen, K. G., Brekke, H., Suthren, R., Furnes, H., Sturt, B. A. and Robins, B. 1985. *Lithostratigraphy and petro-chemistry of Caledonian rocks on Bømlo, SW Norway.* In: Gee, D. G. and Sturt, B. A. (Eds), *The Caledonian Orogen - Scandinavia and related areas.* Wiley, New York, 679 - 692.

-Padget, P. and Brekke, H. 1996. *Arendal, Bedrock Map.* Scale 1 : 250 000. Norwegian Geological Survey.

John R. V. Brooks (United Kingdom of Great Britain and Northern Ireland)

CAREER RESUME

My career has spanned 37 years in the Oil and Gas Industry working both as a petroleum geologist within the industry, and as a regulator for the United Kingdom Government.

Own Company

2001 - to date Director *Brookwood Petroleum Advisers Ltd.*

Having retired from the dti in December 2000, I formed my own company, *Brookwood Petroleum Advisers Ltd.* in January 2001 to provide geological and licensing advice to host governments wishing to launch acreage offers, for example Cambodia and Indonesia for Trade Partners UK

Senior Visiting Research Fellow *Southampton Oceanographic Centre*

Involved with Law of the Sea matters, and marketing SOC capability in this area. Led delegation to AAPG annual convention and mounted a display Booth. Currently involved in obtaining business for the Centre.

United Kingdom Civil Service, Department of Energy/Department of Trade & Industry.

1973 - 2000 Director of Exploration & Licensing *Oil & Gas Directorate, Department of Trade & Industry*

Responsibilities in Oil & Gas Directorate

Oil and gas licensing policy and regulation of licenses, and licensees, for exploration and production onshore United Kingdom and offshore on the United Kingdom Continental Shelf (UKCS).

The position also involved:

Possession of a sound and detailed knowledge of the petroleum geology of the United Kingdom Continental Shelf and land, exploration seismic and drilling techniques, and the oil and gas business environment.

A thorough familiarity with the workings of government and the regulations relating to petroleum licensing.

Advising Ministers on a wide range of Licensing and technical issues.

Negotiation of work programmes during licensing rounds, since 1980 (7th - 18th), the section of blocks (acreage) for inclusion in rounds and for auction, and the recommendation of awards to Ministers.

Presentation of 'yet-to-find' reserves.

Management of Contracts, e.g. British Geological Survey.

Determination of Fields under Petroleum Revenue Tax regulations.

Technical input to negotiations, led by the Foreign & Commonwealth Office (FCO), involving the delimitation of boundary lines with France, Eire, Denmark (Faeroes) and Iceland.

Advice to the Isle of Man Government on petroleum licensing rounds

Advice to the FCO on the exploration the Falkland Island Shelf, and on the territorial extension to the UKCS under Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS).

Advice to the Governments of Brazil and Venezuela, in association with Trade Partners UK, then Offshore Supplies Office, and recently to the Governments of Indonesia and Cambodia.

Marketing of UK Oil & Gas opportunities at key exhibitions and conferences.

Presentations made world- wide, and writing papers on the prospectivity of the UKCS.

Career prior to DTI: **10 years as a petroleum geologist in the oil and gas industry.**

1969 – 1973	**Senior Geologist**	***Gas Council Exploration Ltd.***
1966 – 1969	**Geologist**	***Amoco UK Petroleum Ltd.***
1963 – 1966	**Geophysicist**	***Robert H. Ray Ltd.***

ACADEMIC QUALIFICATIONS

2001	Senior Visiting Research Fellow	***University of Southampton – Southampton Oceanographic Centre***
1999	D.Sc. (Honorary)	***Kingston University***
1963	B.Sc. Special Honours (Mineralogy & Petrology)	***University of London***

KEY TRAINING

Secondment to BP in Glasgow, Aberdeen, Wytch Farm, and Alaska. Exposure to all aspects of BP's then current business including management of change and financial management.

PROFESSIONAL QUALIFICATIONS

Fellow	*Geological Society*	(On Council twice)	(FGS)
		Chartered Geologist	(C.Geol)
Member	*American Association of Petroleum Geologists*		(AAPG)
Member	*Association of International Petroleum Negotiators*		(AIPN)
Member	*Institute of Petroleum*	(Currently on Council)	(M.Inst.Pet.)

AWARDS

1996	**Petroleum Group Medal, Geological Society.**
1997	**Distinguished Service Award, AAPG.**
1998	**Commander of the Most Excellent Order of the British Empire (CBE)** ***Her Majesty's Government***

PUBLICATIONS

Brooks, J. R.V., Stoker, S., & D. Cameron, 2001. American Association of Petroleum Geologists, Memoir 74, pp. in press.

Glennie, K. W., Brooks, J., & J. R. V. Brooks, 1987, *Hydrocarbon exploration and geology of North West Europe,* in Petroleum Geology of North West Europe, Eds. J. Brooks and K. Glennie, London, Graham & Trotman, pp. 1-10.

Brooks, J. R. V., 1986, *Future Potential for Hydrocarbon Exploration on the United Kingdom Continental Shelf.* American Association of Petroleum Geologists, Memoir 40. pp. 677-698.

Brooks, J. R. V., 1983, *Geological Information from Hydrocarbon Exploration on the United Kingdom Continental Shelf,* in Petroleum Geochemistry and Exploration of Europe, The Geological Society, Blackwell Scientific Publications, Oxford, pp. 343-356.

Brooks, J. R. V., 1980, *A Review of the current status of U.K. Exploration and estimation of undiscovered reserves potential on the U. K. Continental Shelf.* UN CCOP.

Brooks, J. R. V., 1978, *Exploration status of the Mesozoic in the U.K. Northern North Sea,* in NPF – Mesozoic Northern North Sea Symposium, Oslo. Norsk Petroleumsforening (NPF), pp2-1 – 2-28.

Brooks, J. R. V., & Pamela Thomas. 1977. *A classified bibliography of North West European Continental Shelf Geology.* Scott. J. Geol.. 1 pp. 1-10.

Brooks, J. R. V.. & J. A. Chesher, 1975, *Review of the Offshore Jurassic of the United Kingdom Northern North Sea,* in NPF- Jurassic of the North Sea, Stavanger, Norsk Petroleumsforening (NPF).

Brooks, J. R. V., & Pamela Thomas. 1974. *A selected bibliography of North Sea Geology (up to 1974).* Proc. Geol. Ass. 85, pp. 103-111.

Whitten, D. G. A. with J. R. V. Brooks. 1972. *Dictionary of Geology.* London. Penguin Books.

Galo Carrera Hurtado (Mexico)

Birthdate:	**19 August 1953**
Languages:	**Equally bilingual in English and Spanish, and some experience in French.**

UNIVERSITY EDUCATION

B. Geophys. Eng. studies from 1971 to 1976 Faculty of Engineering, National Autonomous University of Mexico, Mexico D.F.

Dipl. Phil. studies from 1977 to 1978 School of Philosophy. Panamerican University, Mexico D.F.

M. Sc. Eng. studies from 1980 to 1982 Department of Geodesy and Geomatics, University of New Brunswick, Fredericton, New Brunswick, Canada.

Ph.D. studies from 1982 to 1985 Department of Geophysics. University of Toronto, Toronto. Ontario, Canada.

Visiting Scientist during 1986 at the Bedford Institute of Oceanography. Dartmouth. Nova Scotia, Canada.

Areas of concentration: geodesy. hydrography, geophysics and the law of the sea.

SEMINARS AND COURSES

1969-1971	Diploma in English awarded by the Mexican-North American Institute of Cultural Relations. Mexico. D.F.
1977	Seminar on the Theory of Leadership and Organisational Productivity. Organised by the College of Civil Engineers of Mexico, Mexico D.F., 15-17 August.
1978	Course on Gravimetry. Cartographic School of the Interamerican Geodetic Survey. Fort Clayton. Panama, 8-26 May.

1985	Seminar on the Aerotriangulation Program Space-M, University of Toronto, Canada, 18-19 February.
1985	Seminar on the Global Positioning System (GPS), University of New Brunswick, Canada, 15 June.
1990	French Immersion Course, Henson College, Dalhousie University, Halifax, Nova Scotia, Canada, 5-22 February.
1992	Partnership with the Canadian International Development Agency in the Developing World, Sheraton Hotel, Halifax, Nova Scotia, Canada, 3 February.
1992	High Performance (Parallel) Alliant Fortran Programming, High Performance Computing Centre, Halifax, Nova Scotia, Canada, 4-8 May.
1994	High Impact Presentations, Dale Carnegie Training, Dartmouth, Nova Scotia, Canada, 16-17 March.
1995	Developing Common Desktop Environment (CDE) Applications, Solaris Developer and Networking Conference, Moscone Centre, San Francisco, California, USA, 23-24 May.

SCHOLARSHIPS

1982-1984	Academic Scholarship, National Council of Science and Technology, Mexico.
1984-1985	Reginald Blyth Scholar, Department of Geophysics, University of Toronto, Canada.

AWARDS AND DISTINGUISHED POSTS

1979	Second Place in the Second National Contest of Scientific Research for Young Scientists. Contest organised by the National Autonomous University of Mexico.
1989	Vice-President of the Canadian Hydrographic Association.
1988-1989	Chairman of the Special Study Group on Geodetic Aspects of International Maritime Boundary Delimitation of the Canadian Hydrographic Association.
1992-1993	Executive Board Member of Hypercomp, a High Performance Computing Association, Halifax, Nova Scotia, Canada.

1989-1999	Secretary of the Committee on Geodetic Aspects of the Law of the Sea (GALOS) of the International Association of Geodesy.
1992-1996	Associates' Director and Executive Board Member, Oceans Institute of Canada, Halifax, Nova Scotia, Canada.
1992-Present	National Representative to the International Commission on Recent Crustal Movements (ICRCM) of the International Association of Geodesy.
1995-Present	Honorary Consul of Mexico in Nova Scotia, Canada.
1996-2001	Honorary member of the Committee on the Geodetic Reference System for South America (Sistema de Referencia Geodésico para America del Sur, SIRGAS).
1997-1999	Member of the Advisory Council of the Faculty of Engineering, National Autonomous University of Mexico (FI-UNAM).
1997-2001	Founding Member, Halifax - Mexico Community Alliance.
1997-2002	Elected member, Commission on the Limits of the Continental Shelf.
1998-2001	Editor, Journal of Marine Geodesy. An International Journal of Ocean Surveys, Mapping, and Sensing.
2000	Guest professor. Second Institute of Oceanography, State Oceanic Administration, Hangzhou, People's Republic of China.
2000	Fellow of the International Association of Geodesy (IAG). Appointed by decision of the IAG Executive Committee at its meeting in Nice, 28 April.
2002-2007	Elected member, Legal and Technical Commission of the International Seabed Authority.

EMPLOYMENT

1977-1978	Directorate of Studies of the National Territory (DETENAL), National Institute of Statistics, Geography and Informatics (INEGI), Mexico.
1978-1980	Research Assistant, Institute of Engineering, National University of Mexico. Associate Professor, Faculty of Engineering, National University of Mexico.
1982-1984	Teaching Assistant in the Geodesy I and II courses, Dept. of Survey Science, University of Toronto, Canada. Instructor: Dr. Petr Vanicek
	Research Assistant in Geodesy, University of Toronto, Canada.

1982-1983	Translator English-Spanish, Book "Geodesy: The Concepts" by P. Vanicek and E. Krakiwsky, North Holland, Amsterdam, 651 pp.
1984-1985	Teaching Assistant in the Geodesy I and II courses, Dept. of Survey Science, University of Toronto, Canada. Instructor: Dr. Attallah M. Wassef
1986-1987	Visiting Scientist with the Canadian Hydrographic Service at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada.
1987-Present	External scientific consultant with the following organisations (in chronological order): Canadian Hydrographic Service, Fisheries and Oceans, Canada; International Centre for Ocean Development, Halifax, Nova Scotia, Canada; Oceans Institute of Canada, Halifax, Nova Scotia, Canada; Geodetic Survey Division, Natural Resources, Canada; Geological Survey of Canada, Natural Resources, Canada; South Pacific Forum Fisheries Agency, Honiara, Solomon Islands; International Hydrographic Organization, Monaco; University of New Brunswick, Fredericton, New Brunswick, Canada; Commonwealth Secretariat, London, United Kingdom; Faculty of Engineering, National Autonomous University of Mexico, Mexico; Ministry of Foreign Affairs, Kingston, Jamaica; National Institute of Statistics, Geography, and Informatics (INEGI), Mexico; Brazilian Institute of Geography and Statistics, Rio de Janeiro, Brazil; Department of Foreign Affairs, Manila, Philippines; Department of Foreign Affairs, St George, Grenada; Department of Foreign Relations (SRE), Mexico; Ministry of Land Use and Habitat, Victoria, Mahe, Seychelles; Ministry of Foreign Affairs, Muscat, Oman; and Ministry of Foreign Affairs, Georgetown, Guyana.
1989-1992	External lecturer with the International Maritime Law Institute, Valleta, Malta.
1989-1992	External lecturer with the Marine Management Program, Dalhousie University, Halifax, Nova Scotia, Canada.
1989-Present	Director and founder of Geometrix - Geodetic and Hydrographic Research Inc a federally incorporated Canadian company that specialises in scientific research.
1994-1995	Coodinator and professor of Marine Technology, Marine Management Program, Dalhousie University, Halifax, Nova Scotia, Canada.
1994-Present	Annual course co-ordinator and lecturer with the Continuing Education Division of the Faculty of Engineering, National Autonomous University of Mexico, Mexico.

PROFESSIONAL AFFILIATIONS

1985-1998	Member of the American Geophysical Union.
1988-1992	Member of the Canadian Hydrographic Association.
1990-2000	Associate of the Oceans Institute of Canada, Halifax, Nova Scotia, Canada.

MAJOR FIELD SURVEYS

1993	Organiser and Manager of *Operacion 70*. A Global Positioning System (GPS) survey of over 40,000 points measured in the States of Mexico, Morelos, and Guerrero from 15 September to 15 October for the National Institute of Statistics, Geography and Informatics, Mexico.
1998	Organiser and geodesist for the Geodetic Positioning Project of the Grenadian Archipelagic Baseline System. A Global Positioning System (GPS) survey of the archipelagic straight baseline system encompassing the islands of Grenada from 9-14 February for the Government of Grenada.

RESEARCH ENDEAVOURS

Geodetic and hydrographic methodologies for international maritime boundary delimitation;

Scientific and technical determination of the outer limits of the continental shelf;

Optimum design of geodetic networks for positioning and geodynamic applications;

Statistical analysis of information from sea and lake water level gauges; and

Investigation of mathematical models for the determination of movements of the earth's crust.

ACTIVITIES IN THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF

1997	Elected member by the Sixth Meeting of States Parties to the United Nations Convention on the Law of the Sea, United Nations Headquarters, New York, NY, 13 March.
1997	First Session of the Commission on the Limits of the Continental Shelf, United Nations headquarters, New York, NY, USA, 15-20 June, (CLCS/1). Contributor to the development of the Rules of Procedure (CLCS/3).

1997 Second Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 2-12 September, (CLCS/4).

Contributor to the development of the Rules of Procedure (CLCS/3/Rev.1).
Chairman of the Open Ended Group on the *Modus Operandi* (CLCS/L.3).

1998 Third Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 4-15 May, (CLCS/7).

- Chairman, Open Ended Group on Confidentiality - Annex II to the Rules of Procedure;
- Chairman, Research Group on Geodesy;
- Chairman, Editorial Committee of the Scientific and Technical Guidelines;
- Chairman of the Editorial Committee Working Groups on:

1. Introduction;
2. Entitlement to and delineation of the outer limits of the continental shelf;
3. Geodetic Methodologies and the outer limits of the continental shelf;
10. References and Bibliography; and

Annex I. List of International Organisations.

- Member of the Editorial Committee Working Groups on:

4. The 2,500 m isobath;
5. Foot of the slope determined as the point of maximum change in the gradient at its base;
6. Foot of the slope determined by evidence to the contrary to the general rule;
9. Information on the outer limits of the continental shelf; and

Annex II. Flowcharts, tables, and illustrations summarizing the procedure for establishing the outer limits of the continental shelf.

1998 Fourth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 31 August - 4 September, (CLCS/9).

- Chairman, Open Ended Group on Confidentiality - Annex II to the Rules of Procedure;
- Chairman, Editorial Committee of the Scientific and Technical Guidelines (CLCS/11).

1999 Fifth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters New York , NY, USA, 3 - 14 May, (CLCS/12).

- Chairman, Editorial Committee of the Scientific and Technical Guidelines (CLCS/11).

- Member, Informal Working Group on Training.

1999 Sixth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 30 August - 3 September. (CLCS/18).

- Chairman, Editorial Committee of the Scientific and Technical Guidelines.
- Member of the Working Group on Annex II. Flowcharts, tables, and illustrations summarizing the procedure for establishing the outer limits of the continental shelf.
- Member, Working Group on Training (CLCS/11/Add.1).

1999 International Conference organised by the Advisory Board on Geodetic, Hydrographic and Oceanographic Aspects of the Law of the Sea (ABLOS) of the International Hydrographic Organization (IHO), International Association of Geodesy (IAG) and Intergovernmental Oceanographic Commission (IOC) on Technical Aspects of Maritime Boundary Delineation and Delimitation, Including UNCLOS Article 76 Issues. International Hydrographic Bureau, Montecarlo, Principality of Monaco, 9 - 10 September.

- ABLOS Session Convenor, Chairman, and Speaker. Invited Session of the Commission on the Limits of the Limits of the Continental Shelf:

  Carrera, G. (1999). Wide Continental Margins of the World: A Survey of Marine Scientific Requirements Posed by the Implementation of Article 76 of the United Nations Convention on the Law of the Sea.

  Carrera, G. (1999). The impact of the seabed roughness on the location of the outer limits of the extended continental shelf.

  Albuquerque A. and G. Carrera (1999). Information on the outer limits of the extended continental shelf.

2000 Seventh Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 1-5 May. (CLCS/21).

- Chairman, Editorial Committee (CLCS/22).
- Member, Working Group on Training.
- Chairman, Standing (five-member) Committee on Confidentiality.
- Convener, Co-Chairman and Speaker, Open Meeting of the CLCS, United Nations Headquarters, New York, New York, USA, 1 May:

  Astiz, P.O. and G. Carrera (2000). Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf: Part I, Chapters 1 to 3. Open Meeting of the CLCS.

  Srinivasan, K.R. and G. Carrera (2000). Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf: Part II, Chapters 4 to 6. Open Meeting of the CLCS.

Juracic, M. and G. Carrera (2000). Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf: Part III, Chapters 7 to 9.

Carrera, G. (2000). Geographic scope and scientific challenges posed by Article 76 of the United Nations Convention on the Law of the Sea.

Carrera, G. and A. Albuquerque (2000). An outline for the preparation of a national submission to the Commission on the Limits of the Continental Shelf.

2000 Eighth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 28 August - 1 September, (CLCS/25).

- Chairman, Standing (five-member) Committee on Confidentiality. Revision of Annex II to the Rules of Procedure (CLCS/3/Rev.3).
- Chairman of the Editorial Committee. Outline for a five-day training course for delineation of the outer limits of the continental shelf beyond 200 nautical miles and for preparation of a submission of a coastal State to the Commission on the Limits of the Continental Shelf (CLCS/24).
- Member, Working Group on Training.

2001 Ninth Session of the Commission on the Limits of the Continental Shelf. United Nations headquarters, New York, NY, USA, 21 - 25 May, (CLCS/29).

- Chairman, Standing (five-member) Committee on Confidentiality. Corrigendum (CLCS/3/Rev.3/Corr.1).
- Chairman of the Editorial Committee. Internal Procedure of the Subcommission of the Commission on the Limits of the Continental Shelf (CLCS/L.12).
- Member, Working Group on Training.

ACTIVITIES IN THE LEGAL AND TECHNICAL COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY 2002-2007

2001 Elected member for the period 2002-2007 by the Council of the International Seabed Authority represented by States Parties to the United Nations Convention on the Law of the Sea, International Seabed Authority Headquarters, Kingston, Jamaica, 13 March.

PUBLICATIONS AND SCHOLARLY ADDRESSES

Over 190 combined publications in journals published and scholarly addresses made in international conferences, seminars and courses in all five continents.

SYMPOSIUM PARTICIPATION

Over 60 international symposia and conferences attended from 1977 to 2001.

Peter F. Croker (Ireland)

Date and place of birth: 8 December 1951, Dublin

Education

Technical College:	**1970 — Riversdale College, Liverpool, England** **Ordinary National Diploma in Nautical Science**
University:	**1971-1975 — Trinity College, Dublin** **B.A. Mod. (Hons) in Geology**

Employment

1985-present **Petroleum Affairs Division, Department (Ministry) of Marine and Natural Resources (Dublin, Ireland)**

Petroleum Exploration Specialist (geophysicist) in Division responsible for promotion, monitoring and regulation of petroleum exploration activity offshore Ireland. Has been involved in Law of the Sea issues since 1986. Provided all the technical cartography support for the Anglo-Irish delimitation negotiations 1987-1988 and 1991-1992. Responsible for the design, tender, contract, acquisition, processing and interpretation of seismic and bathymetric surveys over Ireland's continental margin in 1995 and 1996.

Affiliations

- Active member of the Society of Exploration Geophysicists since 1980.
- Active member of the European Association of Geoscientists and Engineers since 1993.

UNCLOS Groups of Experts' Meetings Attended

March 1993	Member of the Group of Technical Experts on the Definition of the Continental Shelf convened by the United Nations Office of Legal Affairs which prepared the booklet entitled 'The Law of the Sea: Definition of the Continental Shelf', published by the United Nations in 1993.
September 1995	Member of the Group of Experts on Preparations for the Establishment of the Commission on the Limits of the Continental Shelf convened by the United Nations Office of Legal Affairs which prepared the report entitled "Commission on the Limits of the Continental Shelf: its functions and scientific and technical needs in assessing the submission of a coastal state" (*cf.* SPLOS/CLCS/INF/1).

Commission on the Limits of the Continental Shelf

June 1997 - present:	Member of the Commission on the Limits of the Continental Shelf. Elected to position of Rapporteur of the Commission representing the Western European and Other States Group. Chairman of the Geophysics Working Group on the Scientific and Technical Guidelines 1997-1998. Member of the Confidentiality Committee elected May 2000.

Selected publications

- Whittington,RJ; Croker,PF; Dobson,MR (1981): Aspects of the geology of the south Irish Sea. Geological Journal 16, 85-88.
- Croker,PF; Whittington,RJ; Dobson,MR (1982): Cardigan Bay (Sheet 52 degrees N - 06 degrees W) Solid geology, (1:250,000 Offshore Map series). (Institute of Geological Sciences/Geological Survey of Ireland).
- Kashai,EL; Croker,PF (1987): Structural geometry and evolution of the Dead Sea - Jordan rift system as deduced from new subsurface data. Tectonophysics 141, 33-60.
- Croker,PF; Shannon,PM (1987): The evolution and hydrocarbon prospectivity of the Porcupine Basin, offshore Ireland. In: Petroleum Geology of North West Europe. (Eds: Brooks,J; Glennie,KW) Graham & Trotman, London, 633-642.
- Croker,PF; Klemperer,SL (1989): Structure and stratigraphy of the Porcupine Basin: relationships to deep crustal structure and the opening of the North Atlantic. In: Extensional Tectonics and Stratigraphy of the North Atlantic Margins. (Eds: Tankard,AJ; Balkwill,HR) American Association of Petroleum Geologists, Memoir, 46, 445-459.
- Murphy,NJ; Croker,PF (1992): Many play concepts seen over wide area in Erris, Slyne troughs off Ireland. Oil and Gas Journal 90(37), 92-97. (September 14)
- Hovland,M; Croker,PF; Martin,M (1994): Fault-associated seabed mounds (carbonate knolls?) off western Ireland and north-west Australia. Marine and Petroleum Geology 11(2), 232-246.
- Croker,PF; Shannon,PM (1995): The petroleum geology of Ireland's offshore basins: introduction. In: The Petroleum Geology of Ireland's Offshore Basins. (Eds: Croker,PF; Shannon,PM) Geological Society, London, Special Publication, 93, 1-8.

- Croker,PF (1995): Shallow gas accumulation and migration in the western Irish Sea. In: The Petroleum Geology of Ireland's Offshore Basins. (Eds: Croker,PF; Shannon,PM) Geological Society, London, Special Publication, 93, 41-58.

- Croker,PF (1995): The Clare Basin - a geological and geophysical outline. In: The Petroleum Geology of Ireland's Offshore Basins. (Eds: Croker,PF; Shannon,PM) Geological Society, London, Special Publication, 93, 327-339.

- Croker,PF; O'Loughlin,O (1998): A catalogue of Irish offshore carbonate mud mounds. (Geosphere-biosphere coupling: Carbonate Mud Mounds and Cold Water Reefs, University of Gent, Belgium, 7th-11th February, 1998) IOC Workshop Report No. 143, p.11.

- Henriet,J-P; De Mol,B; Pillen,S; Vanneste,M; Van Rooij,D; Versteeg,W; Croker,PF; Shannon,PM; Unnithan,V; Bouriak,S; Chachkine,P (1998): Gas hydrate crystals may help build reefs. Nature, 391, 648-649.

- Tappin,DR; Croker,PF (1999): New South Irish Sea geology map. In: "The Petroleum Exploration of Ireland's Offshore Basins" conference, Dublin, 29-30 April, 1999: Extended Abstracts, (Eds: Croker,PF; O'Loughlin, O), p.188.

- Unnithan,V; Henriet,J-P; Shannon,P; Croker,P (2000): Carbonate mound provinces to the west of Ireland: an overview. EOS, Transactions of the American Geophysical Union 81(48), 638. (Book of Abstracts, AGU 2000 Fall Meeting, December 15-19, 2000, San Francisco, California, Poster OS61B-18)

- Huvenne,VAI; Croker,PF; Henriet,J-P (2002): A refreshing 3-dimensional view of an ancient sediment collapse and slope failure. Terra Nova (February issue).

Presentations made on behalf of the Commission on the Limits of the Continental Shelf

Croker,PF (1999)	The mandate and work of the Commission on the Limits of the Continental Shelf. Presentation at ABLOS Conference, Monaco, 9-10 September 1999.
Croker,PF (2000)	The mandate and work of the Commission on the Limits of the Continental Shelf. Presentation at Open Meeting of the Commission, United Nations Headquarters, New York, 1 May 2000.

Indurlall Fagoonee (Mauritius)

Date of birth: 21 February 1950.

Areas of expertise

Marine science/environment.

Environment impact assessment, sustainable development, marine environment protection, coastal management, coral reef ecosystems, global issues, sea level rise, environmental planning and institutional development. Law of the sea.

Education: Curriculum development, science and technology planning and management, environmental sciences.

Environmental health.

Environment and policy.

Strategic planning; long-term strategist.

Relevant professional affiliations

Fellow, Institute of Biology, United Kingdom of Great Britain and Northern Ireland

National Association of Underwater Instructors (NAOI) USA: scuba diving: Dive Leader, Assistant Instructor, Dive Master.

Language proficiency

English and French (spoken and written) — both mother tongue.

Field experience

Mauritius, Rodrigues, Togo, Gabon.

WORK PROFILE

CURRENT POSITION

Sept. 1998 - to date	**Pro Vice Chancellor** **University of Mauritius** ***(Curriculum Development, Distance & Virtual Learning, Quality Assurance, Innovative Teaching Technologies, International Relations)***

Feb 1996 - August 1998	**DEAN** **Faculty of Science** **University of Mauritius**
	Consultant **on Environment and Marine Science for FAO/World Bank and UNESCO, and Government of Mauritius**

PREVIOUS POSITIONS

March 1995 - Jan 1996	**Head, Dept. of Biological Sciences**
April 1994 – to date	***Professor*** **of Environmental Sciences**
January 1988- March 1991	***ADVISOR*** **on Agriculture, Environmental Matters and Marine Affairs, Ministry of Agriculture, Fisheries & Natural Resources**
November 1988 - December 1989	***Consultant*** **on Marine Environment, SIGMA Consulting Engineers**
June 1989 - December 1989	***Consultant*** **on Sea Level Rise Impacts, Center for Environmental Studies, State University of New Jersey, USA**
1976 - 1987	**Lecturer, Senior Lecturer, then Associate Professor at University of Mauritius**

Courses taken at the Rosentiel School of Marine and Atmospheric Science, University of Miami, and other activities in USA

- **Introduction to Fisheries Science**
  Fishes and their Environment
  Fish Population Dynamics
  Fisheries
  Biological Oceanography
  Chemical Oceanography
  Survey of Oceanography
  Physical Oceanography
  Ocean Law
  Marine Biochemistry and Bioenergetics
  Care and feeding the microcomputer

- **ADVANCED STUDY TOPICS**
  Survey of Marine Resources of the Indian Ocean
  Management of Utilization of Coastal and Marine Resources of the Indian Ocean
  Management of International Fisheries Resources
  Laboratory techniques in Plankton and Mariculture Studies
  Laboratory techniques in Marine Animal Physiology
  Laboratory techniques in Coral Reef Bioecology

- **INTERNSHIPS**

  Southeast Fisheries Center, National Oceanic and Atmospheric Administration (NOAA) - Stock Assessment of demersal fishes.

  National Marine Fisheries Service (NMFS), NOAA, Department of Commerce, Washington D.C., U.S.A. in the Offices of Fisheries Management, Utilization Research, Research Investigations, Industry Services, International Fisheries, and Habitat and Protected Species.

  Oceanographic Expedition, aboard the NOAA Research Vessel Oregon II, under the auspices of NMFS, NOAA Pascagoula Laboratory, Mississippi, U.S.A

  Bureau of Marine Research, Department of Natural Resources, St Petersburg, Florida, U.S.A

MARINE SCIENCE & ENVIRONMENT (1983 - TODATE)

(1) **Marine Studies**

(i) Studying ways and means of exploiting the living and non-living resources of the Exclusive Economic Zone of Mauritius. Data Collection on the fisheries and other resources of the SW Indian Ocean.

(ii) Oceanographic Cruise on board Research Vessel Charles Darwin (April-May 1987).

(iii) Coastal Ecosystem Studies: Lagoon, Coral reefs and mangroves, algae, crab ecology, coastal ecosystems. Marine Pollution and Protection.

Grants from AUPELF-FICU, UNESCO, Intergovernmental Oceanographic Commission (IOC),UNESCO/SCI Coastal and Marine Resource Planning, Development and Management Marine Policy.

(2) **Remote Sensing Applications**

Initiated, and Head of, a Study Group on Remote Sensing Applications (SGRESA) in Mauritius.

(3) **Marine Conservation**

Created a Marine Conservation Unit in the Ministry of Agriculture (activities: lagoon monitoring; marine park) (1988 - 90)

STUDENT PROJECTS SUPERVISED (1977-1998): 120

(at BSc, MPhil/PhD levels)
Agriculture
Fisheries/Biology/Marine Science
Environmental Science

Recent Postgraduate Research Supervision

1. Studies on fish behaviour . PhD awarded in June 1998
2. Plankton Studies. PhD awarded in August 1999
3. Towards establishing thresholds for coral bleaching in Acropora formosa. MPhil (April 1999)
4. Assessing Science Practicals in Mauritius. Mphil upgraded to PhD status in Feb 1999.
5. Impact of Tourism on Coral Reef Ecosystem

PUBLICATIONS IN MARINE SCIENCE

Fagoonee, I (1981). Perspectives d'exploitation des ressources marines a Maurice. Journal, University of Mauritius 10/11: 48 - 60

Fagoonee, I. & West D.C. (1983). Ecological effects of new technologies on Mauritian coral reefs, with particular reference to the Riambel Wave Project. Proceedings, National Energy Conference. University of Mauritius, 10-15 December 1980. (Baguant J., Carver G., Fagoonee I. & Yeung Lam Ko L.K.C., eds.) pp. 831 - 837

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Fagoonee, I (1984). Why is the Indian Ocean considered less productive? Journal University of Mauritius. Nos. 22 & 23, July - Dec 1984. Pp. 114 - 124.

Fagoonee, I (1984). Survey, Management and Utilization of Coastal and Marine Resources of Mauritius. Journal University of Mauritius. Nos. 22 & 23, July - Dec. 1984. pp. 125 - 151.

Fagoonee, I (1984). Perspectives on the Law of the Sea for Mauritius. Journal University of Mauritius Nos 22 & 23, July - Dec. 1984, pp. 152 - 179.

Fagoonee, I. Paturau J. M., Ragoonaden S. & Daby D (1985). Prospects for marine-based industries for Mauritius. In: Proc. National Conf. Industrialisation, Univ. of Mauritius, Sept. 2-7, 1985. 29p.

Fagoonee, I (1987). Remote sensing techniques in coral reef studies. In: Proc. 20th International Symposium on Remote Sensing of the Environment, Nairobi, Kenya., 4-10 December 1986. Pp 616 - 632.

Fagoonee, I (1987). Potential of remote sensing for Mauritius. In : Proc. 20th International Symposium on Remote Sensing of the Environment, Nairobi, Kenya, 4-10 Dec. 1986. Pp 830 - 842.

Fagoonee, I (1987). Prospects for phycocolloid production in Mauritius. Association o Commonwealth Universities (ACU) Council Meeting, University of Mauritius, March 1987. 12p.

Fagoonee, I (1987). Un profil de l'état des recifs coralliens de l'ile Maurice. J.Nat 11: 17 - 30.

Fagoonee, I (1987). Applications of remote sensing to oceanography, fisheries and coral reefs. Seminar on Remote Sensing, University of Mauritius; 1 - 15 Aug. 1987. 20 pp.

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Fagoonee, I (1988). Working Paper on Coastal aspects of Mauritian Environment. World Bank Meeting. Dec. 5 - 7, 1988.

Fagoonee, I. (1989). Coastal marine ecosystems of Mauritius in some elements of

ecology in Mauritius, MSPCA publication. pp 109-122

Fagoonee, I. (1989). Coastal Zone of Mauritius: Sea Level Rise Considerations. Service Bureau Publ. Mauritius, 195 pp + xii.

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Fagoonee, I (1991). Strategy for Marine resource development. In Proc. National Seminar on Industrial Development Strategy, 7 - 10 May 1991, Mauritius. 20pp.
Fagoonee, I (1991). Potential Impact of Sea Level Rise in Mauritius. Workshop on Causes and Consequences of Sea Leave Rise on the Western Indian Ocean littoral Coasts and Islands. Mombasa, Kenya 24 - 29 June 1991. 11pp.

Fagoonee, I & Daby D (1995). Coastal Zone Management in Mauritius. In: Integrated Coastal Zone Management in East Africa. O. Linden (ed.) pp. 217 -249.

Fagoonee, I (1993). Environmental Impact Assessment of Hotel Development on the lagoon and corals of Pointe aux Piments, Mauritius. Consultancy Report. 40 p.

Fagoonee, I Daby D. & T Ramjeawon (1994). An Appraisal of the Marine Environment of Grand Baie Region for a Sewage Outfall. Consultancy Report.

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Turner, J., Hardman, E., **Fagoonee,** I., Daby, D., Baghooli, R., Persands, S., & Klaus R., (July 2000). The State of the Reefs of Mauritius following the 1998 Mass Coral Mortality in the Indian Ocean. Report to the Mauritius Research Council.

Turner, J., Hardman, E., Klaus, R. , **Fagoonee,** I., Daby D., Baghooli R & Persands S. (2000) The Reefs of Mauritius. In: Coral Reef Degradation in the Indian Ocean. Eds. D. Souter, D. Obura & O. Linden. Publ. By CORDIO SAREC, SWEDEN. Pp. 94-107.

PROFESSIONAL ACCOMPLISHMENTS, INCLUDING U N EXPERIENCE/CONSULTANCIES

Field Experience: Mauritius, Rodrigues, Togo, Gabon, Eastern Africa

Co-Leader of World Bank Technical Mission on Environment, Leading to formulation of an Environment Investment Program for Mauritius. (January - March 1988)

Prepared background papers and 15 environmental project write-ups in connection with sustainable agriculture, marine, natural resource conservation and management.

Responsible for preparation and presentation of lead technical paper-cum -projects on *"Sustainable Agriculture and Development"* for World Bank's International Meeting on the Mauritian Agricultural Sector (Donors Conference). (September - December 1990).

Co-Scientific Leader with Canadian International Center for Ocean Development in an Environmental (lagoon) Assessment Mission to Rodrigues Island. (July- August 1990).

Consultant for the preparation of a Master Plan for the development and protection of the Northern Tourist Zone, covering and co-authoring reports on, solid waste nanagement, reef and lagoon studies, marine and littoral pollution, sediment loading, underwater surveys, current patterns, feasibility study of a sewage outfall, a sewerage system, a Master Plan for the sustained development of the Zone. (Nov. 1988 - Dec. 1989).

As ***Consultant*** for State University of New Jersey, report on the environmental and socio-economic impacts of global climatic change and sea level rise. (June. 89 - Dec. 89).

FAO/World Bank Environment Planning Expert to develop an Environment Action Plan for TOGO, to set up the environmental protection framework, to advise and give training to the local consultants, and strengthen the capacity of the government and private cadres in environmental matters. (July 1991 - December 1992).

UNDP/FAO : ***Consultant on Environment (Agricultural)*** for 5th UNDP Programming Mission, Togo - March 1992. FAO and UNDP Res. Reps.

FAO/UNCED : Author contract for a Background Paper on *"Sustainable Agriculture and Rural Development in Small Island Countries"* Agr.: SIC 4. Jan-Feb. 1992.

Consultant for UNESCO as **Marine Science Specialist** for advising on the establishment of a Marine/Environmental Science Research and Teaching Programme at the Omar Bongo University, Gabon. (April - May 1992).

Consultant as Biologist for a project on the characterisation of **sugar industry wastes and effluents.** Client : Mauritius Sugar Authority, Govt of Mauritius/ World Bank. (April 1993- April 1994)

Consultant as **Marine Environmental Expert** for Workshop on Coastal Zone Management. Tanzania, April 1993.
Marine Environment ***Consultant*** for Environmental Impact Assessment on Coastal Marina Development , Black River, Mauritius. May- June 1993.

Marine Environment ***Consultant*** for **Environmental Impact Assessment of Hotel Development, Pointe aux Piments**, July - September 1993.

Consultant -Resource Person for a Regional Training Workshop on Coastal Zone Management, Indian Ocean, Nov. 1993.

Marine Environment ***Consultant*** for **"Appraisal/EIA of the Marine Environment of Grand Baie Region for A Sewage Outfall Proposal"**, Government of Mauritius, July 1994.

Marine Environment ***Consultant*** for **Environment Impact Assessment re: Airport Development, Mauritius, and Harbour Development**, May - August 1994, 15.

Prepared several Development Action Plans for the Faculty of Science, April -July 1992; 1993 - 97; 1998-2003

Assisted International Center for Ocean Development, Canada, in developing a Curriculum for an M.Sc. course in Marine Affairs.

Supervised over 120 research projects.

Carried out research in pest and pesticide management, coastal ecosystems, coral reef studies, marine conservation, sea level rise studies.

Academic contribution in the field of marine science and environmental studies, initiating a degree course in Environmental Studies.

Organised and/or participated in a large number of national and international meetings and conferences.

Ocean Science Expert for ***Intergovernmental Oceanographic Commission***, OSLR programme of IOCINCWIO.

Resource Scientist on Environmental Sensitivities of an Oil Spill, for the Oil Industry: Workshop on management of oil spill in Mauritius.

Consultant on Identification of the Training Needs in Environment in Mauritius for the **Indian Ocean Commission/European Development Fund**, July-August 1996.

Consultant for the **Commonwealth Science Council, UK** for elaborating a **Regional OCEAN RESOURCES PROGRAMME FOR THE WESTERN INDIAN OCEAN (CORP-WIO)**, Jan -March 1998.

Consultant for the **Commonwealth Science Council,UK** to represent it at the OAU/STRC (Organisation of African Unity/Scientific, Technical and Research Commission) at its **Ocean Sciences Council meeting, Mombasa, Kenya, May 1998.**

Consultant Commonwealth Science Council for conducting (and as Team Leader) a Regional Training Workshop on **Environmental Impact Assessment**, Mauritius, May 1998.

Educational Background

UNIVERSITE DE PARIS VI and XI, as French Government Scholar:

Licence ès Sciences - 1974
Maitrise de Recherches - 1975
Diplome D'Etudes Approfondies (Postgrad. Diploma)- 1976
Doctorat de Spécialité (Ph.D - 1978
Chartered Biologist (U.K.) - 1993

UNIVERSITY OF MIAMI, FLORIDA, USA, as a Fulbright (Humphrey) Scholar at the School of Marine and Atmospheric Sciences :

M.S. **Marine Science** - 1984

UNIVERSITY OF MANCHESTER , U.K.
MANCHESTER BUSINESS SCHOOL:-

Attended a Course on **Science And Technology Assessment and Policy**, April 1993.

TELEUNIVERSITE DE QUEBEC, MONTREAL, May 2000:-

TRAINING in ***PROJECT MANAGEMENT***, under aegis of Canadian International Development Agency (CIDA)-funded CAERENAD (a multilateral collaborative) programme (on Distance Education) involving TeleUniversite du Quebec, Chili, Brasil, Costa Rica, Senegal and Mauritius.

University of Abertay Dundee, Dundee Business School, Scotland:

Leadership and Strategic Change in Higher Education* , *Managing Change 2000, August 2000
(A strategic development programme for Heads of Commonwealth Universities)

PUBLICATIONS

Over 120 scientific papers
A large number of pseudo-scientific contributions
Editorial Boards of International Scientific Journals
Edited several conference proceedings
Several Government Reports on Environmental and other Issues.

Chairman/Membership of Committees

Chairman, National Productivity and Competitivity Committee on Human Resources Development

- Member of University Senate for many terms/years; Member and Chairman of Faculty Boards.
- Chairman or Member of a large number of National Committees : Agricultural Diversification; Pesticide and Fertilizers, Natural Products Resources, National Environment Commission, National Environment Commission, National Environment Committee, Cane Millers and Planters Control Board, Advisory Committees on Environment, Natural Sciences, Medical and Health Sciences. Member(Alternate) Mauritius Research Council (*MRC*), Member Environment Advisory Council, Chairman National Coordination Committee for Marine Expedition Indian Ocean Royal Society UK, Scientific Adviser on Oil Spill Contingency Committee., etc.
- Chairman of Marine 2020 studies, sub-group and Member, **Science and Technology** Group for National Long Term Perspective Studies for Mauritius 2020; also member of Marine Resources Group, National Economic Development Council.
- **Coordinator, All-University Environmental Group, University of Mauritius**
- **Coordinator, National IGBP Committee for SASCOM/START Programme.**
- **Member, National Accreditation and Equivalence Council, Mauritius.**
- **Member, Board of Directors, Mauritius Oceanographic Institute.**
- **Chairman, National Productivity and Competitivity Committee on Human Resources Development**

Noel Newton St. Claver Francis (Jamaica)

Date of birth: 27 August 1950.

Education

1987	M.B.A. (Master of Business Administration), Nova University, United States of America.
1987	Certificate in Maritime Boundary Delimitation, University of Toronto, Canada.
1983	Canadian Hydrographic Service (Survey II Course).
1978	Postgraduate Diploma (Surveying), University College, London.
1975	BSc (Natural Sciences), University of the West Indies.

Professional qualification

1987	Commissioned Land Surveyor.
1983	Associate of Royal Institute of Chartered Surveyors.

Experience

Present	Deputy Director of Surveys (non-cadastral).
2000	Technical adviser in the Guyana/Suriname boundary dispute resolution.
1997	Member of the United Nations Commission on the Limits of the Continental Shelf.
1996	Member of the Jamaican Delegation on maritime boundary delimitation negotiations with Nicaragua.
1995-1996	Member of the Jamaican delegation on maritime boundary delimitation negotiations with the United Kingdom in respect of the Cayman Islands.
1995	Member of the Jamaican delegation on maritime boundary delimitation negotiations with Cuba.
1992-1995	Member of the Jamaican delegation on maritime boundary delimitation negotiations with Colombia.
1990-present	Member of the Inter-Ministerial Committee on Maritime Matters.
1988	Member of the National Disaster Committee (served as Officer in Charge of logistics during emergency phase caused by hurricane Gilbert).
1985	Assistant Director of Surveys with responsibility for Hydrography
1985-1987	Various cadastral surveys.
1982-1985	Surveyor in charge of extension of the geodetic survey network around Jamaica.

1982	**Surveyor in charge of field surveys.**
1980-1982	**Various harbour survey projects, along with a survey of the Rosalind Banks.**

International meetings and conferences

2000	**Coordinator of the Regional International Hydrographic Organization Conference.**
1997-present	**All meetings of the United Nations Commission on the Limits of the Continental Shelf, including the preparation of technical guidelines for countries submitting claims for the extension of their continental shelf beyond 200 miles.**
1996	**Meetings of the International Seabed Authority, Kingston, Jamaica.**
1996	**Conference on the Caribbean Sea/Gulf of Mexico, Curaçao.**
1992-1995	**Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, Kingston, Jamaica.**
1987	**The Canadian Hydrographic Conference, Canada.**
1986	**Meeting on the Status of Regional Hydrography, Port of Spain.**
1981	**International Federation of Surveyors Conference, Canada.**
1981	**The Canadian Hydrographic Conference, Canada.**

Papers written

1995	**"Siltation Pattern in Kingston Harbour", a technical study for the Port Authority of Jamaica.**
1987	**"The Status of Hydrographic Surveying in Jamaica", presented at the 1987 Canadian Hydrographic Conference.**
1983	**"The Densification of Basic Control for Cadastral Mapping", Thesis, Royal Institute of Chartered Surveyors.**

Mihai Silviu German (Romania)

Date and place of birth: 3 June 1950, Piatra Neamt, Romania.

Professional expertise

Geological and geophysical management, promotion and negotiation, regulation.

Work history

August 1995 to present Director of Promotion and Negotiation Department — National Agency for Mineral Resources (NAMR)

NAMR is one of the agencies created by the Romanian Government (as part of its reform programme) in 1994 as an independent autonomous institution responsible to monitor and regulate the activity of entities involved in the mineral resources domain (local and foreign) in Romania.

Responsibilities

- Expertise: seismic and drilling, including projects related to the Romanian offshore;
- Promotion: AAPG, SEG, EAPG, World Petroleum Congress, etc. (presentation of bidding rounds and petroleum opportunities in international conferences and organizing the national stands in these events);
- Negotiation: Exploration and Production Petroleum Concession Agreements, including the offshore blocks, offered by the National Agency for Mineral Resources in the last eight years (Istria, Neptun, Constanta, Midid and Pelican);
- Negotiation: member of Romanian team in the negotiations of the Romanian-Ukrainian Agreement for the Delimitation of the Continental Shelf and Economic Exclusive Zones in the Black Sea;
- Supervision and management: President of the Management Committee established for the Exploration and Sharing Production Agreement in the Blocks XIII Pelican and XV Midia, signed with Enterprise Oil and assigned to Paladin Expro Ltd.and Sterling Resources);
- Regulatory issues: participation in drafting of the Petroleum law, its methodological norms, coordinator for implementing of technical regulations;
- Bidding activities: participation in drafting of the mode! agreements, bidding procedures, and data packages;
- Public relations: responsible for NAMR interface with petroleum companies involved in Romania or interested in the current bids.

- 1985-1994—Expert, Ministry of Geology

Responsibilities:

- Expertise: geological, geophysical and drilling projects, including the projects relating to the Romanian offshore;

   - Supervision: petroleum activities (exploration in Eastern Carpathian and the Black Sea).

- 1974-1985—Geologist, IPGG Bucharest

  Responsibilities:

  - Geological mapping: Eastern Carpathian, Maramureş Depression, Libya;
  - Geological interpretation.

Other skills

- Academic qualification: Geological and Geophysical Faculty — University of Bucharest, 1974 — M Sc. in Geology and Geophysics.
- Training courses:

1996	Petroleum Economics and Contract Negotiations — Bucharest — Gaffney, Cline & Associates.
1996	"Economics of Petroleum Exploration and Production & Oil and Gas Negotiations" — Geneva — Petroconsultants.
1996	"Petroleum Economics and Risk Analysis" organized by Enterprise.
1986	Well logging interpretation — Ploieşti — organized by the Ministry of Petroleum
1980	Geological interpretation of seismic data — Bucharest — IPGG

- Author of various papers presented in national and international conferences.
- Good communication skills.
- Foreign languages:

  English: good.

  French: good.

Membership

Member of RAPG and Romanian AAPG Team Leader.

Asif Inam (Pakistan)

Date of birth: 20 April 1959

QUALIFICATION	:
PH.D (Marine Geology)	"*Temporal and Contemporary Fine-Grained Sedimentation across the Indus Sedimentary System*"; 1996, University of Wales, UK.
M.Sc. (GEOLOGY)	University of Karachi, 1983.
B.Sc. Hons. (GEOLOGY)	University of Karachi, 1982.

PROFESSIONAL TRAINING

- Accomplished a course in "Oceanography", conceptualized jointly by University of Hawaii, U.S.A. and National Institute of Oceanography, Pakistan, 1985.
- Completed a course in "Remote sensing applications in hydrology" organised by Pakistan Space and Upper Atmosphere Research Commission at Karachi, 1985.
- Completed a month long training programme on offshore drilling ship "Danwood Ice" during the drilling of wildcat well PAKCAN1 in Arabian Sea. Fundamental training in well-logging and onboard preliminary analyses of drilled subsurface rock samples was obtained (1985).
- Completed a course in "Remote sensing Applications" organised by Pakistan Space and Upper Atmosphere Research Commission at Lahore (1991).
- Completed a month long hands on training on the handling of Piston Corer, Gravity Corer, Kastenlot Corer, Box Corer and Sea Floor Photography onboard R.R.S. Charles Darwin (1987).
- Completed training on sub-sampling and core-logging at Deacon Laboratory, Institute of Oceanographic Sciences, U.K. (1988).
- Completed a refresher course on: *Transitional and Marine Clastic Environments and Facies Modelling* organised by National Centre of Excellence in Geology, University of Peshawar (1991).
- Attended an international training course "IOC-IOMAC-Germany advanced training course on marine geology and geophysics off Pakistan" held from 12-26 Nov., 1994 at Karachi.
- Successfully completed a training course on "Determination of Radionuclide in marine sediments organised by NIO at Karachi, from 8-18 August 1994, with the assistance of International Atomic (IAEA), Vienna and University of Washington, Seattle, USA.

- Participated in the short training course on "Basic Concepts of Sequence Stratigraphy" from 19-21 February, 1998 at NIO Karachi and conducted by Dr. Bilal-ul-Haq, of NSF, USA.

RESEARCH EXPERIENCE

Worked as Research Officer in National Institute of Oceanography, Pakistan, from February 1984 to December 1991.

Working as Senior Research Officer since 1st of January 1992.

MAJOR RESPONSIBILITIES

- Incharge of Geophysical Laboratory at NIO.
- Member of the Continental Shelf Extension Programme Cell, established at NIO for planning and executing the research for the extension of Continental Shelf of Pakistan and for the acquisition of a multi-disciplinary oceanographic research vessel, equipped with multichannel seismic system, for NIO.
- Research on the Coastal and Marine sedimentary processes; non-living marine resources.

RESEARCH WORK

- ➢ Participated in various oceanographic/hydrographic cruises in inshore and offshore areas of Pakistan since 1984.
- ➢ Participated in a bathymetric survey for the proposed 237 MW power plant at Gadani (Baluchistan), Pakistan during May-June, 1995.
- ➢ Participated in a bathymetric survey for the proposed barge mounted 134 MW power plant at Korangi creek, Karachi during July-August, 1995.
- ➢ Participated in a high resolution seismic survey (bathymetry, sonography, subbottom profiling) and geological investigation, for the proposed Single Point Mooring (SPM) pipe-line in the Karachi offshore during Dec., 1994 - Jan., 1995.
- ➢ Participated in the side scan sonar (SSS) survey for the search of lost equipment deployed on the shallow coastal area off Bundal Island, Karachi, 1996.
- ➢ Participated in the Indus Fan Project, jointly organised by the Institute of Oceanographic Sciences U.K. and Department of Earth Sciences, Swansea U.K., onboard R.R.S. Charles Darwin. Beside 3.5kHz profiler, 10kHz precision echo sounder, 160 inch^3 air-gun, gravity meter and magnetometer, a reconnaissance scale sonar system "GLORIA" was chosen to map the portion of the Indus Submarine Fan (January, 1987). Based on the preliminary interpretation of GLORIA sonographs and accompanying 3.5 kHz profiles an intensive sediment sampling programme at four selected sites on the fan was carried out during September 1987.
- ➢ Participated in the Leg-1 cruise (7 - 27 September, 1992) from Seychelles to Karachi onboard

Dutch research vessel TYRO under the Netherlands' International Indian Ocean Programme. It included 3.5 KHz and air-gun profiling and magnetic data collection along with bottom/subbottom sediment sampling.

- Participated in the Second Pakistan Antarctic Expedition (27 Dec.,1992 - 11 Mar.,1993) and carried out marine geophysical-geological as well as hydrographic surveys in the Antarctic region. Marine geophysical survey work included the data acquisition using 3.5 KHz profiling system, side scan sonar, and digital data acquisition and processing system, GPS satellite positioning system etc. Sediment sampling using grab and piston corer was also carried out.

- Involved in a geophysical route survey of sea-me-we 3 submarine optical fibre cable system in Karachi inshore waters (Hawksbay area) from 16th of June to 31st July, 1997.

- Involved in the "Indus Fan Project". A joint venture between the Department of Earth Science, University College of Swansea, U.K., Institute of Oceanographic Sciences, U.K., and the National Institute of Oceanography, Pakistan (1986-1990).

- Participated in the Geophysical Cruise Planning of Cruise 20/87 of R.R.S. Charles Darwin on the Indus fan at the Institute of Oceanographic Sciences, Deacon Laboratories, Surrey, U.K. and also at the Department of Earth Sciences, University College of Swansea, United Kingdom (December, 1986).

- Participated in the Geological Cruise Planning of Cruise 27/87 of R.R.S. Charles Darwin on the Indus Fan at the Institute of Oceanographic Sciences, Deacon Laboratories, Surrey, U.K. and also at the Department of Earth Sciences, University College of Swansea, United Kingdom (July, 1987).

- Participated in the Planning Committee (Geology and Geochemistry Group) of the PAKUS Project at Karachi (January 1991).

- Participated in the Project Planning of Pak-Netherlands cooperation in the Indian Ocean Programme at the National Institute of Oceanography, Karachi (1992) and at various Institutes and organisations in Netherlands e.g., Netherlands Geosciences Foundation (GOA), The Hague, the Netherlands; Physical Geography Department of the University of Utrecht; Institute for Paleoenvironmental and Paleoclimatological Studies of the University of Utrecht; Institute for Geodynamics of Utrecht; The Netherlands Research School of Sedimentary Geology; The Netherlands Geological Survey, Haarlem; Netherlands Institute of Sea Research, Texel; Department of Geochemistry, University of Utrecht; Institute for Earth Sciences of the Free University of Amsterdam (April-June, 1994).

- Participated in the Project Planning of Pak-German cooperation for the geological study of the Indus and Makran shelf.

- Participated in the bathymetric surveys for the feasibility studies of Marine Outfall in Karachi for the Karachi Water and Sewerage Board (KWSB), under the funding by the Asian Development Bank (ADB) (1993).

- Participated in hydraulic and hydrodynamic study for the reclamation and development of Bundal Island, Karachi. The objective of the study was to evaluate the geological, hydrological, sedimentological background leading to the formation of the Bundal Island and nearby structures of the creeks. At the same time to ascertain the present situation/hydraulic and hydrodynamical observations of waves, tides, currents, suspended load, bottom sediments, water quality etc. during monsoon period. The final report after the completion of the project has been submitted to Pakistan Navy (1996).

- Carried out an Initial Impact Examination of the offshore Indus Basin for Halcrow Pakistan.

The report was comprised of background information on the Geology and Geophysics of the Arabian Sea and it also assessed the impact of 2D seismic survey on the marine organisms.

- Carrying out sedimentalogical studies for NIO's LBOD Project, since 1995.
- Participated in the MAKRAN-1 Pak-German collaborative research cruise SO-122 onboard F.S.Sonne (1997) in the Makran, Murray Ridge and Indus offshore region of Pakistan during which a variety of geophysical multichannel seismic, single-channel seismic, swath bathymetry, gravity and magnetic data were collected. Preliminary seismic data interpretation was made onboard.
- Participated in the search of wreckage of Pakistan Navy's Orion PC-3 Surveillance Aircraft in offshore Makran area. During this search I used GeoAcoustic's Side Scan Sonar System.
- Involved in the "Feasibility studies for the Restoration and Reclamation of Bundal and Khiprianwala Islands" for Pakistan's Defence Officers Housing Authority".
- Involved in the "Nutrient and sediment flux studies Project". This project is being funded by Asia Pacific Network (APN) of Japan.
- Involved in the preparation of a proposal "Large Asian Deltas" for APN funding.
- Participated in 3D multi channel Seismic Surveys onboard R/V Atlantic Explorer and R/V Ramform Viking carried out for petroleum exploration in the Indus Basin and Makran offshore area respectively. Apart from seismic data acquisition and onboard processing the knowledge about commercial seismic cruise/survey planning and management techniques was also obtained.
- Prepared several computer programmes in BASICS for sedimentalogical and geochemical analyses.

EXPERTISE / EXPERIENCE IN

- High Resolution Geophysics including hydrography/bathymetry, subbottom profiling, side scan sonar imaging, magnetometry, GPS/DGPS etc. from analog/digital data acquisition to data processing, interpretation and report writing.
- 2D/3D multi channel marine seismic/geophysical operations.
- Oceanography and marine geology/geo-environment surveys.
- Oceanographic/geotechnical project development.
- Marine survey designing, planning, execution and management.
- Marine geophysical/geological and oceanographic equipment system evaluation, selection, configuration etc.
- Consultancy in marine related projects/programmes, especially in marine geosciences.

SEA GOING EXPERIENCE	More than 500 days sea going experience in Oceanographic and Geological/Geophysical cruises onboard R.B. Mumtaz, S.V. Behr-Paima, D.V. Darwood Ice, R.R.S. Charles Darwin, R.V. TYRO, R.V. Sonne, S.P.S. Mangen and R.B. Navicula and on various other fishing trawlers. Also participated in the 3D seismic surveys

onboard Norwegian vessels M/V Atlantic Explorer (off Indus Delta) and M/V Ramform Viking (off Makran coast).

PARTICIPATION IN NATIONAL AND INTERNATIONAL WORKSHOPS, SEMINARS AND SYMPOSIA

- Participated in an international workshop on "Integrated Coastal Zone Management (ICZM)" organized by NIO in Karachi from October 10-14, 1994 in cooperation with Intergovernmental Oceanographic Commission (IOC), UNESCO with the support of United Nations Development Program (UNDP). The proceedings of the workshop have been published by IOC, UNESCO as their document "Workshop Report No. 114".
- Participated in a Post-Antarctic Expedition workshop, held from 3-6 May, 1993 at National Institute of Oceanography, Karachi, to integrate observations and progress to further research work on data and samples collected during the Antarctic Expedition 1992-93.
- Participated in a National Workshop on Climate Change And Sea Level Rise, 17-18 September, 1995, Karachi. The objective of the workshop was to evolve a national response strategy to monitor the impact of climate change and sea level rise on Pakistan coastal zone.
- Attended the workshop on the results of the Netherlands Indian Ocean Programme (1992-1993) at Taxel, The Netherlands from 13-16 February 1995. NIOZ/GOA of Netherlands sponsored the visit.
- Participated in the Black Sea Cruise Programme with Turkish scientists onboard S/V Piri Reis from September 29 to October 6, 1998.
- Participated in an APN/SASCOM/LOICZ Regional Training Workshop on Biogeochemical Budgeting and Socio-Economic Modelling for Coastal Scientists, Colombo (18-22 September, 2000).
- Delivered a talk on the "Current Methodology and Techniques used in Marine Geology & Geophysics for the Exploration and Exploitation of seabed resources" in a one day seminar on "The exploration and exploitation of Seabed Resources" on June 26th 2001 at NIO, Karachi.

TECHNICAL REPORTS

Prepared a report on "The geochemical studies of Mud volcanoes along Pakistan coast"; 1985.

Prepared a report on "The distribution of organic carbon content in surficial sediments of south eastern shelf of Pakistan"; 1985.

Prepared a report on "The geochemical studies of surficial sediments off Makran Coast of Pakistan"; 1986.

Prepared a report on "A computer programme for grain-size data analysis by the methods of Graphic measures"; 1986.

Prepared a report of Hydrographic Survey of S.V. Behr Paima off Makran Coast, 1985.

Prepared a report on the sedimentological analysis of sea-bed sediment samples collected under the project of Hydraulic Monitoring of Tidal Link Drain, 1994.

Prepared a report on the sedimentological analysis of sea-bed sediment samples collected under the project of Hydraulic Monitoring of Tidal Link Drain, 1997.

Prepared a report on the sedimentological analysis of sea-bed sediment samples obtained under the hydrographic survey for a proposed 350 MW Power Plant near Hub River at Khalifa point, Karachi for Fauji Foundation in 1991. The findings of the project were submitted to NESPAK in the form of report for further necessary action.

Prepared a report on the sedimentological analysis of sea-bed sediment samples obtained under the survey for the proposed 237 MW power plant at Gadani (Baluchistan), Pakistan during May-June, 1995.

Prepared a report on the sedimentological analysis of sea-bed sediment samples obtained under the survey for the proposed barge mounted 134 MW power plant at Korangi creek, Karachi during July-August,1995.

Prepared a report on the sedimentological analysis of sea-bed sediment samples obtained under the geological investigation, for the proposed Single Point Mooring (SPM) pipe-line in the Karachi offshore during Dec., 1994 - Jan., 1995.

Prepared a report on the sedimentological analysis of sea-bed sediment samples obtained under the hydraulic and hydrodynamic study for the reclamation and development of Bundal Island, Karachi.

N.I.O. Technical Report, 1993. Post-Monsoon survey of Gwadar.

Prepared an Initial Impact Assessment Report of Indus Fan area for the French Petroleum Company Total Fina Elf, in October 2000.

NIO-1995, Geophysical Acoustic Survey of the proposed SPM and pipe-line route from off Korangi creek to onshore. Project report for NIO.

NIO-1995, Hydrographic Survey for 134 MW barge mounted power station, Korangi creek, Karachi.

NIO – 1995, Hydrographic survey report for 206 MW Steam Turbine Power Plant, Abdullah Goth, Gadani, Balochistan.

PUBLICATIONS

Cramp, A and Shipboard Scientific Party; 1987. Preliminary Cruise Report of Cruise CD27/87 of R.R.S. Charles Darwin of Indus Fan, August-September 1987.

Cramp, A., Kenyon, N.H., Kidd, R.B., Weaver, P.P.E., Rothwell, R.G., Ayub, A., Inam, A., and Rasul, N. 1990. Facies identification using Long Range Sidescan Sonar (GLORIA) and high resolution profiler - The Indus Fan. pp 110-112 in: Sediments 1990; 13th International Sedimentological Congress 26-31 August 1990, Nottingham. Keyworth: International Sedimentological Congress/British Geological Survey.

Kenyon, N.H., Hunter, P.M., Weaver, P.P.E., Ayub, A., Inam, A., Rasul, N., Cramp, A., Carbon, P., Cooper, A., and Stevenson, A. 1990. High input and low input turbidite

systems: examples from the Indus Fan and the Bering Sea Basin. p265 in: Sediments 1990; 13th International Sedimentological Congress 26-31 August 1990, Nottingham. Keyworth: International Sedimentological Congress/British Geological Survey.

Inam A., G.M. Memon, 1991. Sedimentary Environment of Indus Deltaic Region (Abstract) In proceed: of International seminar on the Indus - The Life line of Pakistan, Islamabad, 2-7 March 1991 organised by the Pakistan Council of Research for water resources.

van der Linden, W.J.M. and Shipboard Scientific Party, 1992; Preliminary Cruise Report of Leg 1 of Indian Ocean Programme: Sedimentation of the Indus Fan.

Inam A., 1992. Reconstruction of Paleoenvironment prevailed in and around Antarctica. Project Proposal selected for the Second Pakistan Antarctic Expedition 1992-93. Inam, M. Tahir, M. Danish, 1993. Marine Geological Survey, Preliminary report of Second Pakistan Antarctic Expedition, 1992-93 NIO, Pakistan.

Muhammad Tahir, A. Inam, M. Danish, 1993. Marine Geophysical Survey, Preliminary report of Second Pakistan Antarctic Expedition, 1992-93 (Technical Report) NIO, Pakistan.

Inam, A. M. Danish, M. Tahir, 1993. Marine Geology of the Brekilen Bay and Breid Bay, Antarctica. Preliminary report of Second Pakistan Antarctic Expedition, 1992-93 NIO, Pakistan.

Shipboard Scientific Party, 1993. Initial Cruise Report of 2nd Pakistan Antarctic Expedition, 1992-93.

Working Group Report, 1993. Workshop on 2nd Pakisatan Antarctic Expedition, 1992-93. Held at NIO, Pakistan in May 1993.

A.A. Khan; A. Inam; M. Danish; G.M. Memon; M.H. Ansari; 1993. Distribution of organic carbon in the Indus sedimentary system. (Abstract). In PAK-US conference on Arabian sea living resources and the environment. 20-24 June, 1993. Karachi-Pakistan. Organised by American Institute of Marine Biology, Office of Naval Research USA and Marine reference collection and resources centre, University of Karachi, Pakistan.

M. Tahir; A. Inam; M.H. Ansari; M. Danish; A.A. Khan; 1993. Physiography of the Indus canyon and its sediment characteristics. (Abstract). In PAK-US conference on Arabian sea living resources and the environment. 20-24 June, 1993. Karachi-Pakistan. Organised by American Institute of Marine Biology, Office of Naval Research USA and Marine reference collection and resources centre, University of Karachi, Pakistan.

Inam, A; A.A.Khan; 1993. Mud Volvanoes along Pakistan Coast. In proceedings of National conference on Problems and Resources of Makran Coast and Plan of Action for its Development. Quetta, 28-30 September, 1991. Organised by Pakistan Council for Scientific and Technology.

A.A.Khan; G.M. Memon; M.Danish; A.Inam; 1993. Distribution of surface sediments off Indus Delta on the continental shelf of Pakiatan. Pakistan Journal of Marine Science. Vol.(2),1.

Ahmed, S.N., A. Ali, A. Inam and S.H.N. Rizvi, 1994. The seasonal variation of circulation pattern off Karachi coast, Pakistan. In: coastal dynamics 94, Barcelona, Spain.

Inam, A. A. A. Khan, M. Danish and S. M. Tabrez, 1997. Hydrodynamic and Geological Study of the Phitti Creek and Adjoining Islands. Abstract submitted in the 3rd Geological Congress, Peshawar 27-30 October, 1997.

Inam, A., M. Danish and M. Tahir, 1997. Sedimentological Studies of the Brekilen Bay, Antarctica. Abstract submitted in the 3rd Geological Congress, Peshawar 27-30 October, 1997.

Inam, A. M. Danish, M. Tahir, 1997. Sedimentological studies of the Brekilen bay, Antarctica. National Institute of Oceanography, Pakistan.

Roeser, H.A., Adams J., Bargeloh H.O., Block M., Damm V., Dohmann H., Fritsch J., Kewitsch P., Puskeppeleit K., von Rad U., Reichert C., Schrader U., Schreckenberger B., Sievers J., Steinmann D., VoB W., Schillhorn T., Inam A., Tahir M. and Cheema A.H., 1997. The Makran Accretionary wedge off Pakistan: Tectonic Evolution and fluid migration - Part 1. SONNE Cruise SO-122 (7 August - 6 September 1997) Operational Report and preliminary results.Published by BGR, Germany 111pp.

Schillhorn T., M. Tahir, Cheema A., Blok M., Dam V. and Inam A.,1997. Operational report on Hydroacoustics (PARASOUND & HYDROSWEEP Systems), in CRUISE REPORT: SONNE SO-122, MAKRAN-I, published by BGR, Germany.

Tahir, M., Schillhorn T., Cheema A., Blok M., Dam V. and Inam A., 1997. Preliminary results of Hydroacoustics,in CRUISE REPORT: SONNE SO-122, MAKRAN-I, published by BGR, Germany.

Tabrez A.R. and Inam A., 1998. Gas Hydrate: Potential source of energy (Hydrocarbon) in offshore areas of Pakistan. In Indian Ocean Marine Affairs Cooperation, Colombo, Sri Lanka.

Tabrez A.R. and Inam A., 1998. "A potential energy source off Makran". Science and Technology Section, Dawn Newspaper, 28th January, 1998.

Viqar Hussain, A.R. Tabrez and Asif Inam, 1999. An Urgent Need for Water Bodies Protection Strategy in Pakistan. Presented at the Third SEGMITE International Symposium on Sustainable Development of Surface and Groundwater Resources, 8-10 March, 1999, Karachi, organised by SEGMITE, NIO and AGID.

Inam, A., A.R. Tabrez and V. Hussain, 1999. Water Resources under Threat. Published in Daily Dawn, March 17, 1999.

Tabrez, A.R. V. Hussain and Asif Inam, 1999. Water Resources Protection and Management in Pakistan. Biosphere, Quarterly Magazine (Jan-March, 1999).

Tabrez, A.R., Inam, A and Amjad, S, 1999. Birth of an Island "MALAN" off Hingol River, Makran, Balochistan. Biosphere, Quarterly Magazine (April-June, 1999).

A.R. Tabrez, A. Inam, 1999. Potential of Hydrocarbon In The Makran Offshore Area. SPE & PAPG Annual Technical Conference, Islamabad.

Inam A. 2000, Cruise Report on 3D seismic Survey carried out by M/V Atlantic Explorer off Indus Delta, February 10 to March 16, 2000.

Delisle, G., U. von Rad, A. Tabrez, A. Inam 2001. Evolution and properties of on- and offshore mud volcanoes of the Makran desert. Arabian Sea Conference, London, U.K. (in press).

Inam, A., M. Tahir, A. R. Tabrez, 2001. Sea-level changes and channel-levee system - the major controlling mechanism for the sediment deposition on the Indus Fan. In "International Symposium and Training Workshop on Sediment Fans of the Indian Ocean and Implications for Marine Policy in the 21st Century" Colombo, Sri Lanka, 18-21 December 2001.

REFEREE: ASSESSMENT OF THE PAPER FOR PUBLICATION IN THE REPUTED SCIENTIFIC JOURNALS

Reviewed a Research Paper on the "History of Indus River" authored by Dr. Peter Clift of Woods Hole Oceanographic Institute, USA, and made comments on all aspects of the manuscript and gave option on the suitability of the paper for publication.

ROLE IN THE DISSEMINATION OF KNOWLEDGE

- Regularly deliver training lectures to Naval officers of Pakistan and allied countries on the "Acoustic characteristics of marine sediments", "Marine geology of the Arabian Sea" and "Latest Methodology in Marine Geology and Geophysics".
- Give hands on training to junior colleagues and university students on "Operating procedures of latest state of the art equipment such as Micromeritics SEDIGRAPH (5100) and LECO's Carbon Determinator (CR-412).
- Involved in the "Computer Literacy Programme for NIO Scientists".

SAFETY OF LIFE AT SEA (SOLAS) TRAINING

- Completed a "Sea Survival training" from Pakistan Marine Academy, Karachi.
- Completed "Basic Fire Fighting" training from Pakistan Marine Academy, Karachi.
- Completed "Elementary First Aid" training from Pakistan Marine Academy, Karachi.
- Completed "First Aid procedures on Seismic Vessel" onboard Norwegian Seismic Vessel "Ramform Viking".

Abu Bakar Jaafar (Malaysia)

Date of birth: 20 October 1949.

EDUCATION

Ph.D. in Marine Geography, University of Hawaii at Manoa, May 1984.

M.En. in Environmental Science, Miami University, Ohio, June 1976.

B.E. (Hons) in Mechanical Engineering, University of Newcastle, Australia, March 1973.

Sijil Pelajaran Malaysia (SPM) (1966), and Higher Certificate (HSC) (1968), Sekolah (M) Alam Shah, Kuala Lumpur.

CURRENT POSITIONS

Group Director of Technology, Peremba Group & Companies.

Director, IT Partners Sdn. Bhd.

Chairman of a number of Peremba Group of Companies.

Elected Member to the United Nations Commission on the Limits of the Continental Shelf (1997-2002).

POSITIONS PREVIOUSLY HELD

Director-General, Department of Environment, Malaysia (16 April 1990-September 1995)

Deputy Director-General (Planning and Development), Department of Environment, Malaysia (January 1988-April 1990)

Director (Operations), Department of Environment, Malaysia (May 1985-31 December 1987)

Principal Assistant Director, Economic Planning Unit, Prime Minister's Department, Malaysia (November 1984-May 1985)

Principal Assistant Director, Department of Environment, Malaysia (Feb. 1984-Nov. 1984)

East-West Grantee, Environment and Policy Institute, East West Center, Honolulu, Hawaii (August 1980-November 1984)

Principal Assistant Director (Water Quality), Division of Environment, Ministry of Science, Technology and the Environment, Malaysia (December 1976 – August 1980)

Staff Engineer, U.S. EPA Industrial Environment Research Laboratory, Cincinnati, Ohio (October 1975 – April 1976)

Factories and Machinery Inspector, Department of Factories and Machinery, Malaysia (January 1973 – September 1974)

OTHER POSITIONS HELD CURRENTLY

Member of the Natural Resources & Environment Board of Sarawak

Secretary to the Environmental Quality Council of Malaysia (since April 1990). Chairman of National Committee on Environmental Standards (for ISO 14000)

Secretary to the Meeting of State EXCOS for the Environment (MEXCOE)

Member of Atomic Energy Licensing Board (since 16/4/90)

Chairman and Member of the Revolving Fund Committee for Straits of Malacca (since 16/4/90)

Member of Advisory Committee on Research for Public Works Department Malaysia (since 28 August 90)

Member of Advisory Board on Graduate Studies in Coastal and Marine Studies, University Sains Malaysia (USM) (since March 91)

Member of the Board of Studies, Science Faculty, University of Malaya.

Member of the Cabinet Committee for Investment & Infrastructure
(since 11 October 91)

Member of the Federal Heads of Government Meeting (since 14 October 91)

Member of the Special Cabinet Committee on KL International Airport.

Member of the Cabinet Committee on "Highland Towers Tragedy" (December 13, 93).

Member of Maritime Enforcement and Coordination Committee of National Security Council, and National Maritime Council (since October 1984)

Member of National Committee on Antarctica (since 1985)

Member of National Panel on Strategic R & D under IRPA (since 1986)

Member of the Cabinet Committee on BAKUN Hydroelectric Project

PROFESSIONAL ASSOCIATIONS

Fellow of the Academy of Sciences, Malaysia (FASc)

Fellow of the Institute of Engineers, Malaysia (FIEM)
Past Secretary General

Environmental Management and Research Association (ENSEARCH) of Malaysia (since April 16, 90) (Founder Secretary General)

Honorary Secretary General of Business Council for Sustainable Development-Malaysia (BSCP-M)

Fellow Malaysian Institute of Economic Research (FMIER)

PUBLICATIONS

THESES

"Prospects for Marine Regionalism in the Straits of Malacca and Singapore", "Ph.D Dissertation", University of Hawaii (Manao), May 1984. 272p.

"Application of Solar Energy Technology for Pollution Control : The Case of Copper Smelting Industry". M. En. Internship report, Miami University, Ohio. June 1976. 268p.

"Dynamic Characteristics of Soluble-Shear Rubber " B.E. (Hons) Thesis, University of Newcastle, Nov. 1972.

GOVERNMENT DOCUMENTS

(Draft) Environmental Quality (Sewage and Industrial Effluents) Regulations, 1978.

(Draft) Chapter IX on the Environment of the Fifth Malaysia Plan, 1986-1990 pp.279-290.

A Handbook of Environmental Impact Assessment Guidelines.

BOOKS

"Marine Pollution" in Marine Policy in Southeast Asia. Eds. George Kent and Mark J. Valencia, Berkely, California : University of California. 1985. pp 267-309. (Co-authored with Mark J. Valencia)

"The Changing Legal Status of the Confrontation : United States and Law of the Sea. Ed. Jon Van Dyke. Honolulu, Hawaii : Law of the Sea Institute, 1985. pp 285-311.

"Prospects for Regional Cooperation in the Straits of Malacca", in Coastal Zone Management in the Straits of Malacca, Eds. Peter R. Burdridge, et al, School for

Resource & Environmental Studies, Dalhousie University, NS, 1988, pp. 184-190.

"Environmental Monitoring and Assessment: The Malaysian Experience", in Environmental Monitoring and Assessment: Tropical Urban Application, Eds. Sham Sani & M. Ahmad Badri. Bangi: Penerbit Universiti Kebangsaan Malaysia, 1988, pp. 184-190.

Kerajaan dan Pengurusan Alam Sekitar (Government and Environmental Management) in Pembangunan dan Alam Sekitar (Development and the Environment in Malaysia). Eds. Sham Sani & Abdul Samad Hadi, Kuala Lumpur: Dewan Bahasa dan Pustaka, 1990, pp. 392-405.

Harmonization of Technology and the Environment: The Malaysian Experience. In: Environment and Development: Ethical and Educational Considerations. Ed. Azizan Haji Baharuddin, Kuala Lumpur: IKD, 1994, pp. 245-261.

Malaysia Country Report. In: Environmental and Urban Management in Southeast Asia. Eds. Azan Awang et al. Johor Bahru: Institute Sultan Iskandar, 1993, pp. 87-109.

Malaysia: Policy, Laws & Resources to Environmental Issues, in Malaysian Development Experience: Changes and Challenges, Kuala Lumpur: National Institute of Public Administration, 1994, pp. 386-401.

JOURNAL ARTICLES

"Legal and Institutional Issues in the Management of the Malacca Straits" Natural Resources J. 25 (Jan. 1985), 195-232. (Co-authored with Mark J. Valencia)

"Malaysia and Extended Maritime Jurisdiction : The Foreign Policy Issues" in Malaysia Journal of Tropical Geography (10 December 1984), 567 87. (Co-authored with Mark J. Valencia)

"Management of the Malacca/Singapore Straits : Some Issues, Options and Probable Responses", Akademika (26 Jan. 1985), 93-117. (Co-authored with Mark J. Valencia)

"A Review of the Proposed Environmental Impact Assessment Procedure for Malaysia". Asian Environment 11 (Third Quarter 1979); 20-29

"Future inter-relationship between Technology and the Environment" ENSEARCH 1 (1) 1986 pp. 5-7.

"The Quality and Control of River Discharges into Malaysia. 1(2) 1986 pp 5-13.

"Engineering and the Environment : Towards Sustainable Development," Khidmat.

"National Response and Transnational Issues", Marine Pollution (1981) 270-271. (Written Mark J. Valencia)

"Environmental Impact Assessment Procedure and Requirements". Khidmat March 1994, pp. 34-36.

PROCEEDINGS/MONOGRAPHS

"Straits Talk" in U.S. Naval Institute Proceedings (March 1985), 120-127 (Co-authored with Joseph R. Morgan)

"Applicability of Solar Energy Technology for Pollution Control : The Case of the Primary Cooper Smelting Industry". In Proceedings 31st Annual Purdue Industrial Waste Conference, Purdue University, May 4-6, 1976. Ann Arbor, MI : Ann Arbor Science, 1977 (Co-authored with Dwight Baldwin, Jr)

"Environment and Pollution Control under the Third Malaysia Plan", in Proceedings of the Symposium on Improving the Quality of Life in Malaysia : The Role of Chemistry Eds. M. Mohinder Singh, Merlin Hotel. Kuala Lumpur. March 24-26, 1977. Chemical Institute of Malaysia pp. 31-39.

A Study on Occupational Exposure to Inorganic Lead at a Battery Manufacturing Factory, Petaling Jaya, Peninsular Malaysia. Monograph Series in Pollution of Environment by Industries. Kuala Lumpur : Factories and Machinery Department. Noc. 1976 (Co-authored with Wan Kar Chan and Abu Bakar Che' Man)

Palm Oil Processing Effluent Treatment : Sedimentation of Raw Palm Oil Processing Effluent. Monograph Series in Pollution of the Environment by Industries. Kuala Lumpur : Factories and Machinery Department, 1974. (Co-authored with Frank Lee)

Comparative Analysis of Marine Pollution in the Straits of Johore, Department of Environment, Kuala Lumpur, Sept. 1985, Second Issue, 9p. 3 Tables. 11 Figures.

WORKING PAPER STUDY SERIES

"Development and the Environment in Malaysia : Prospect for Balanced Growth: Working Paper, East-West Environment and Policy Institute, July 1981. 31p.

"Legal and Institutional Arrangements for Natural Resources Management in Malaysia", Honolulu, HI : East-West Environment and Policy Institute Working Paper, De. 1983, iv, 48pp.

"Review of Past and On-going Research and Monitoring Relevant to Oil Pollution and its Control in the East Asian Seas Region, "In UNEP Regional Seas Reports and Studies No. 96, UNEP/ASEAMS Na. 88-5624, 1988, pp 51-78.

SEMINAR PAPERS

"Organization of Occupational Safety and Health" Paper presented at the Occupational Safety and Health Conference, Ministry of Health, TB Centre, Kuala Lumpur, 18-23 March 1974.

"Environment Pollution Control and TMP" Paper presented at the Role of Chemistry in Environment Seminar, Chemical Institute of Malaysia, Kuala Lumpur 21-25 March 1971.

"Recovery Against Disposal of Solid Wastes". Paper presented at the Applications of Sciences, Technology and Environment, Kuala Lumpur, 20-22 Jun 1977.

"The Environment and Development : An Integrated and Not Conflicting Approach to Growth". Paper presented at the Philippines American Educational Foundation (PAEF), Manila, 24-29 Oct., 1977.

"Environmental Imperatives of Solar Energy Technology Application and Pollution Control". Paper presented at the International Sun Day Seminar Environmental Protection Society of Malaysia, Kuala Lumpur, 3 May 1978.

"Water Quality Management in Malaysia". Paper presented at the Symposium on the Interdependence of Economic Development and Environmental Quality of Southeast Asia : Malaysia as a case study. Miami University, Ohio. 5-7 August 1980. (Co-authored with A. Maheswaran and Godwin Sigam)

"The State of the Environment in Malaysia : Public Sector Perspective". Paper presented at the Environmental Quality Seminar 1985. APDC Kuala Lumpur 8-11 July 1985.

"ASEAN and the Law of the Sea : The Case of the Straits Used for International Navigation", Lecture delivered at the INTAN Foreign Service Course for ASEAN Diplomats, 17 July 1985, Kuala Lumpur.

"Tourism and the Environment". Paper presented at the ITM/MAS/TDC Seminar on the Significance of Tourism in the Malaysian Society, PJ Hilton, Selangor, 8-14 August 1985 15p.

"Environmental Problems in Malaysia : An Overview". Paper presented at the Selangor and Federal Territory Consumers Association Workshop on "Consumer and the Environment for Secondary School Teacher", University House, University of Malaya, Kuala Lumpur, 27 Oct. 1985 35p.

"The Future Inter-Relationship Between Technology and the Environment". Paper presented at the MAE/CETDEM Seminar on Technology and Environment, Federal Hotel, Kuala Lumpur, 26-27 Oct. 1985 12p.

"Environmental Management of the Malacca Straits : Some Issues, Options, and Probable Responses". Paper presented at the Symposium on Environmental Research and Coastal Zone Management Problems in the Straits of Malacca, Medan, 11-13 Nov. 1985. EMDI/USU.

"Environmental Planning and Implementation in Malaysia : An Overview", Paper presented at the EPU/OSA/DOE/INTAN/BPSSM Seminar on "Conservation for Development at INTAN, Bukit Kiara, Kuala Lumpur. May 6-7, 1986. [illegible] Figs. 9 Tables.

"Water Quality Monitoring", Paper presented at the ASEAN-US Training Course on Watershed Research and Management, Serdang, Selangor. June 22-July 5, 1986. 15p.

Papers presented at the "National IHP Kursus Asas Penilaian Sumber Air" (Water Resource Assessment Course) University of Technology Malaysia, Kuala Lumpur. June 30-July 5, 1986; 3 July 1987;

(a) "Prospects for Improvement in River Water Quality",

(b) "Water Quality Criteria and Standards for Water Resources Management",

(c) "Water Quality Monitoring, Design and Operation"

"National Contingency Planning in Malaysia", Paper presented at the ASCOPE/UN-CCOP/NECOR Seminar on Regional Cooperation on Oil Spill Contingency Planning and Response", August 4-8, 1986, Holiday Inn, City Centre, Kuala Lumpur.

"Monitoring and Evaluation" Paper presented at the DOE/CETDEM Workshop on Environmental Impact Assessment, Kuala Lumpur, 8-12 December 1986.

"Environmental Monitoring and Assessment, Bangi, Selangor, 24-29 November 1986.

"The Status of Coastal Area Planning and Management" in Course on the Principles of Coastal Resource Management, 10-21 August 1987, Johor Bahru.

"Environmental Risk Assessment in Malaysia", Paper presented at the 2nd OS-Japan International Workshop on Risk Assessment and Risk Management, Suita City, Osaka Japan, 26-30 October 1987.

"Brisbane, Australia (IAIA '88), Griffith University, Brisbane, Australia, 5-9 July 1988.

"Protection and Preservation of the Marine Environment, "International Ocean Institute Lecture Series", Kuala Lumpur, 17 November 1988.

"Resource Flows in Science Technology for the Environment", Paper submitted to the CSC/COMMANSAT/UK ODA Meeting on Institutional Development for Environmental Action, London, 7-10 January 1989.

"Concept of Coastal Zone Management", Paper presented at the PDC Conference-UUM-Exhibition on Improving Visual Environment in Penang, 25-26 February 1989.

"Energy & The Environment", World Energy Conference : Malaysian National Committee, Petaling Jaya, 5 May 1990.

"The Development of International Marine Environmental Laws and its Implications", Paper presented at the Maritime Industry Seminar of Malaysia, Petaling Jaya, 21 May 1990.

"Toxic and Hazardous Waste Management in Malaysia", Paper presented at the CETDEM-DOE Joint Training Course on Toxic & Hazardous Waste, Kuala Lumpur, September 10, 1990.

"Engineering & The Environment Towards Sustainable Development", Paper at the Seminar of Malaysia Consult '90, Subang Jaya, 21 September 1990.

"Status of Environmental Compliance in the Palm Oil Industry", Paper presented at 11th Annual Meeting of Palm Oil Process Supervisors PORIM, 2 November 1990.

"Policy on Wastewater Treatment and Discharges", Paper presented at National Seminar on Sewerage and Sewage Treatment, Tropical Inn, Johor Bahru, 12 November 1990.

"Global Environmental Issues in Regional Perspective", Keynote address at ENVIROWORLD '91 WTC, Singapore, 27 June 1991.

"Wastewater Management Policy in Malaysia", Paper presented at ADB/ICLARM Conference on Waste Management Problems in the Coastal Areas of ASEAN Region, Singapore, 28-30 June 1991.

"Balancing Development & The Environment: Issues and Challenge" Paper presented at the INTAN Economic Lecture Series 4/91, 28 August 1991.

"Malaysia : Policy, Laws & Responses to Environmental Issues", Paper presented at ENVIROASIA '91, World Trade Singapore, 8 November 1991.

"Status of Implementation of EIA Procedure and Requirements in Malaysia" Paper presented at the 6th Meeting of Federal Heads of Department, Serdang, Selangor, 28 November 1991.

"Protection and Preservation of the Marine Environment : The Case of the Straits of Malacca and Singapore", Paper presented at the IOC/WESTPAC Regional Seminar, Penang, 2-6 December 1991.

Business Opportunities for Environment Engineering", Paper presented at the Malaysian Technology Development Corporation (MTDC) Seminar Series, Kuala Lumpur, 16 June 1994.

"Real Estate & the Environment" Paper presented at the International Real Estate Federation (IREP) Investment Tour of Malaysia, Kuala Lumpur, 13 September 1994.

"Environmental Waste Management in Malaysia", Keynote address at the Faculty of Engineering, National University of Malaysia, Bangi, 28 September 1994.

"Haze Episode in Malaysia : Sources and Control", Paper delivered at the Malaysia Asthmatic Society, PWTC Kuala Lumpur, 15 October 1994.

"Environmental Quality & Development", Paper presented at the Q-Day, MAMPU, Kuala Lumpur, 17 October 1994.

"Environment & Development in Malaysia", Lecture presented at the INTAN Senior Management Training Course, Kuala Lumpur, 28 November 1994.

"Development & the Environment Progress Toward Sustainability" Keynote Address at the Sabah Science & Technology Week, 9 December 1994.

"Unplanned Land Conversion & Its Impact on the Environment", Paper presented at the Ministry of Land and Cooperative Development, Malacca, 19 December 1994.

"Protecting Coastal Zone of Malaysia : Strategies for Pollution Control", An Address at the MIMA Seminar Series, Kuala Lumpur, 22 December 1994.

APPEARANCE ON PANEL OF EXPERTS ON THE FOLLOWING SUBJECT MATTERS

"Energy and the Environment" at TENAGA '85 organized by the Malaysian National Committee of the World Energy Conference (MNC-WEC) April 29-30, 1985. PJ Hilton, Selangor.

"Malaysia and the Law of the Sea" at the national Seminar on Malaysian Maritime Resources : Potentials and Opportunities". September 25, 1986, Kuala Lumpur. Organized by ISIS/Ministry of Transport & Ron Nisay & Associates.

"Limiting Emissions While Sustaining Economic Growth", U.S. EPA and World Resources Institute Workshop on Developing Country Energy Strategies : Implications for the Greenhouse Problem, Washington, D.C., April 28-29, 1988.

"Interdisciplinary Natural Resources Development and Management Program", Asian Institute of Technology (AIT), Bangkok, 2-3 June, 1988.

"Register of Potentially Toxic Chemicals", UNEP-IRPTC Program Review and Evaluation, 1976-1988, Geneva, 21-25 November 1988.

"Priority Setting for the Seventh Malaysia Plan, 1996-2000 : Strategic Sector", University of Science , Malaysia, Penang, 7-8 May 1994.

"Policy Options for Planning and Management for Sustainable Development", at the 1993 ISIS Environmental Conference on Economics and the Environment, Kuala Lumpur, 2 September 1993.

"Energy and the Environment", Paper presented at the Energy Research, Engineering Design, and Commercialization (REDC) Forum, Langkawi, 26 November 1993.

"Business Opportunities for Environment in Malaysia", Luncheon Talk given at the Malaysia-Germany Chamber of Commerce and Industry, Pan Pacific Hotel, Kuala Lumpur, 24 August 1993.

"Progress in Malaysia Towards Environmentally Sound and Sustainable Development with Emphasis on the Materials and Mineral Resources Industries, "Keynote Address at the International Conference on Advanced Materials and Minerals (RAMM), University of Science, Malaysia, Penang, 3 May 1994/

APPEARANCE ON TV

"RTM-IKIM Forum on Human Responsibility Towards the Environment", Kuala Lumpur, 16 May 1994 (In the chair : YBhg. Datuk Dr. Syed Othman Alhabshi)

EXPERIENCE IN THE ORGANIZATION OF SEMINARS/ WORKSHOPS/MEETINGS

DOE/MITRE Corp. System Engineering Seminar on Water Quality, 17-28 July 1978, Kuala Lumpur.

DOE Environmental Quality Seminar, APDC, Kuala Lumpur, 8-11 July 1985.

EPU/OSA/DOE/INTAN/SPSSM Seminar on Conservation for Development at INTAN, Bukit Kiara, Kuala Lumpur, May 6-7, 1986.

ASEAN-Canada Regional Workshop on Pollution and Other Ecological Factors in Relation to Living Marine Resources, Phuket, 23-26 June 1987.

ASEAN-US AID Policy Workshop on Coastal Resources Management, Johor Bahru, 25-27 October 1988.

ASEAN-Canada Project Steering Committee. Second Meeting, 24-26 February, 1989. Phase II First Meeting, 24-26 Feb. 1992, Kuala Lumpur.

National Seminar on UN Conference on Environment & Development (UNCED), 16-19 July 1990, Kuala Lumpur.

National Workshop on UNCED, Port Dickson, 11-15 November 1990.

UNESCO/DOE Workshop on Carbon Cycle and Global Climate Change, Kuala Lumpur, 24-26 October 1991.

OFFICIAL GUEST STATUS

Guest of New Zealand Government : Exchange of Views with NZ Government, Officials and NGO's on environmental matter and visits to NZ environment-related institutions and facilities. 18-24 November 1991.

Guest of Danish Government : Assessment on Aerial Surveillance for Pollution in Europe, 13-18 March 1995.

TRAINING IN ADVANCED MANAGEMENT

INTAN Workshop "Meeting the Challenge : Leadership and Leadership Development". by Prof. Warren Bennis, Kuala Lumpur, 16 July 1992.

INTERNATIONAL MEETINGS

1991 A Delegate to the Malaysia-Singapore Joint Committee on Environment, Johor Bahru, 5 February 1991.

Leader of the Malaysian Delegation and Vice-Chairman of UN ESCAP Meeting of Senior Officials on Environment and Development in Asia and the Pacific, 13-19 February 1991, Bangkok, Thailand.

A Malaysian Delegate to ASEAN Preparatory Meeting for the ASEAN-Australia Forum, 8-9 March 1991, Singapore.

A Malaysian Delegate to the 7th ASEAN-Canada Joint Cooperation Committee (JCC), 3-5 April 1991, Ottawa, Canada.

A Malaysian Delegate to the 14th ASEAN-Australia Forum, 22-23 April 1991, Canberra.

Co-Chairman of ASEAN-Australia Forum Workshop on the Environment, 23 April 1991, Canberra.

A Malaysian Delegate to an International Conference on Toward a Sustainable Environmental Future for the Southeast Asian Region, 6-10 May 1991, Yogjakarta, Indonesia.

A Delegate to the Malaysia-Singapore Meeting on UNCED, Langkawi, 16-18 May 1991.

A Malaysian Delegate to the 9th ASEAN-EC Ministerial Meeting Luxembourg, 30-31 May 1991, and its preparatory meeting 26-29 May 1991.

A Delegate to the Environment Congress for Asia & the Pacific, Tokyo 4-5 July 1991.

The Representative of ASEAN/ASOEN at the UN Interagency Committee on Environment & Development, Bangkok, 17 July 1991.

A Delegate to the Second Meeting of ASEAN Senior Officials on the Environment (ASOEN), Singapore, 17-19 July 1991.

A Delegate to the 24th ASEAN Ministerial Meeting & Post Ministerial Conference, Kuala Lumpur, 19-24 July 1991.

A Delegate to the Second Meeting of Malaysia-Singapore Joint Committee on the Environment, 24-25 July 1991, Singapore.

1990 A Delegate to the First Meeting of Malaysia-Singapore Joint Committee on the Environment, 5 December 1990, Johor Bahru.

A Delegate to Experts Review Panel to update the UNEP List of Environmentally Harmful Chemical Substances, Processes and Phenomena of Global Significance, 26-29 November 1990, Geneva, Switzerland.

1990 A Malaysian Delegate to Ministerial level Conference on Environmental and Development in Asia and the Pacific, 10-16 October 1990, Bangkok, Thailand, and Vice-Chairman of SOED Meeting.

Leader of ASEAN Delegation to Japan/ASEAN
Environmental Experts Meeting, Tokyo, 5-8 September 1990.

Leader of Malaysian Delegation to the 4th Plenary Session of Intergovernmental Panel on Climate Change (IPOC), 27-30 August, Sundsvall, Sweden.

A Delegate to the 29th ASEAN-Ministerial Meeting, Jakarta, 24 July 1990.

Delegate to the Senior Officials Meeting and to the Third ASEAN Ministerial Meeting on the Environment, Kuala Lumpur, 16-19 June 1990.

Chairman of the 13th Meeting of ASEAN Experts Group on the Environment, Kuala Lumpur, 13-15 June 1990.

The Malaysian Delegate at the WMO/UNEP/IPCC Meeting of Response Strategies Working Group on Legal Measures, Geneva, 10-11 April 1990.

Leader of Malaysian Officials at the ASEAN-Australia Project Management Committee Meeting, Singapore, 14-15 March 1990.

A Malaysian Delegate to the ASEAN-USAID Policy Workshop on Coastal Zone Management, Manila, 2-3 March 1990.

Leader of Malaysian Officials at the UNEP Meeting on Legal & Technical Experts to Review a Proposed Legal Framework for the East-Asian Seas Region Action Plan, Bangkok, 12-16 February 1990.

1989 Leader of Malaysian Officials in the ASEAN-Australia Project Management Committee on Coastal Living Resources, Sixth Meeting, Townsville, 16-18 August 1988; 7th Meeting, Manila, 23-24 January 1989.

A Delegate to the 14th Meeting of ASEAN Committee on Science and Technology (COST), 22-24 April 1986, Putra World Trade Center (PWTC), Kuala Lumpur, 19th Meeting, Brunei Darussalm, 20-28 September 1988; 20th Meeting, Manila, 26-28 January 1989.

An expert to Review UNEP Action Plan in the East-Asian Seas, Bangkok, 8-12 December 1986; 4-6 December 1988, Manila, 7-11 January 1989.

1988 A Leader of Malaysian Officials and Chairman of the ASEAN-Canada Project Steering Committee on the Management and Development of Living Marine Resources; Second Meeting, Kuching, 24-26 February 1987; Third Meeting, Kuala Lumpur, 2-4 February 1988.

1987 The Malaysian Delegate to the Conference of Plenipotentiaries on the Protocol on Chloroflurocarbons (CFCs) to the Vienna Convention for the Protection of the Ozone Layer, Montreal, 14-26 September 1987 and its Preparatory Meetings 8-11 September 1987.

A Delegate to the Seventh Meeting of Revolving Fund Committee 16-17 February 1987, Kota Kinabalu, Sabah.

A Delegate to the Third Meeting of ASEAN-Australia Project Management Committee on Tides and Tidal Phenomena, Singapore, 20-22 January 1987.

1986 Head of Malaysian Delegation to the RFC Technical Meeting, Fraser's Hill, 18-19 December 1986.

1985 An Alternate Interim Coordinator of ASEAN Experts Group on Environment at the EXCAP Committee on Industry Technology, Human Settlements and the Environment 9th Session, Bangkok, 10-16 September, 1985.

1984 The Malaysian Delegate to the IMO International Conference on Liability and Compensation for Damage in Connection with the Carriage of Certain Substances at Sea, London, 20 April – 25 May 1984.

A Delegate to the Inter-Governmental Meeting of the Coordinating Body for the Southeast Asian Seas Action Plan, Kuala Lumpur, 4-6 April 1984.

1980 A Delegates to the UNEP Meeting of Government-Nominated Experts to Review the Draft Action Plan for the Protection and Development of Coastal Areas and Marine Environment in the East-Asian Region, Baguio City, June 1980.

A Member of Malaysian National Delegation to the 21st Sessions of the Asian-African Legal Consultative Committee (AALCC), Jakarta, April 25 – May 1 1980.

1979 A Member of Malaysian Official Group to the Second and Seventh Meetings on ASEAN Experts on the Environment, Penang, 1979; Kuala Lumpur, 1984.

A Member of Malaysia Delegation to the Third UN Conference on the Law of the Sea at its 8th and 9th Sessions in Geneva and New York, 1978-1979.

A Leader of Malaysian Official Group to the First Meeting of ASEAN Working Group on Marine Science, Jakarta, 1979.

1977 A Member of Malaysian Delegation at the Second Session of the Intergovernmental Council for International Hydrological Programme (IHP) of UNESCO, Paris, June 20-28, 1977.

Mladen Juračić (Croatia)

Date and place of birth: 22 June 1953, Rijeka, Croatia

Current position

Professor of Marine Geology, Laboratory for Geology and Palaeontology, Department of Geology, Faculty of Science (Assistant dean for international cooperation, 2000-), University of Zagreb.

Languages

English, Italian (fluent).

French, German (fair).

Education

1976	B.Sc. Geology, Faculty of Science, University of Zagreb.
1979	M.Sc., Oceanography, University of Zagreb.
1987	Ph.D., Geology, University of Zagreb.

Profession positions

1999-	Professor of Marine Geology, Environmental Geology and Karst Geology, Department of Geology, Faculty of Science, University of Zagreb.
1995-1999	Associate Professor.
1990-1995	Assistant Professor, Department of Geology, Faculty of Science, University of Zagreb.
1976-1990	Research Assistant, Centre for Marine Research, Ruder Bošković Institute, Zagreb.

Other teaching positions

1987-	Lecturer in marine geology, Graduate faculty of Oceanology, University of Zagreb.
1987-1988	Visiting Professor, University of Venice, Geo-mineralogy Faculty.

International training

1980	Ecole Normale Superieure, Laboratoire de Geologie, Paris, one-month research grant.
1984-1985	University of Venice, Geo-mineralogy Faculty, research grant.
1983-1989	Short-term research and lecture visits (three weeks) to United States of America: Woods Hole Oceanographic Institution, Massachusetts; Environmental Laboratory, Gulf Breeze, Florida; Lamont-Doherty Geological Observatory, Palisades, New York; College of Marine

Studies, University of Delaware; Graduate School of Oceanography, University of Rhode Island, Narragansett, RI, and others

Main research activities

Marine geology, sedimentation pattern on continental shelf, sedimentation in river mouths, surface characteristics of mineral suspended and sedimented particles, the role of suspended particles in transport and fate of contaminants, marine geological cartography. Total of 52 scientific publications of which 18 published in journals covered in Science Citation Index (SCI); 54 presentations on scientific congresses and symposia.

Professional activities

Member of the United States Commission on the limits of the Continental Shelf (1997-2002).

Principal investigator on project entitled "Adriatic sediments: scientific basis for geological cartography" of the Ministry of Science of Croatia (1998-).

Principal investigator, United States-sponsored project entitled "Pollutant receiving capacity of a karstic estuary", Project No. JFP EPA 717, 1986-1989.

Investigator on number of national and international scientific projects in marine geology, geochemistry and marine pollution research (USEPA, National Research Council (CNR)-Italy, UNEP, WHO, EC).

Different applied research (e.g. environmental impact assessments, feasibility studies, applied marine geological cartography, definition of optimal routes for laying cables on/in the seabed in the Adriatic Sea).

Member of the organizing committees of national and international conferences (e.g., Eurocoast International conference "Littoral '96 (Partnership in Coastal Zone Management)", Portsmouth, United Kingdom, September 1996).

Member of the Editorial Board of the scientific journal *Geologiá Croatica*.

Assistant chief editor of the University journal *Sveučilišni vjesnik*.

Membership in professional societies

1975-	Croatian Geological Society (Secretary, 1991-1993).
1978-	International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM).
1980-	Croatian Natural History Society (Treasurer, 1992-1996).
1983-	International Association of Sedimentologists.
1993-	Council for the Scientific Investigation of the Adriatic Sea of the Croatian Academy of Science and Arts.
1993-	Association of Geoscientists for International Development.
1994-	Eurocoast-Croatia (Vice-President, 1994-1999).

1995-	National Committee for IUGS/UNESCO International Geological Correlation Programme (Secretary, 1995-2000).

Yuri Borisovitch Kazmin (Russian Federation)

Date of birth: 3 September 1932.

Languages:

Russian (mother tongue); English (fluent).

Education

1955	M.Sc. Geology, Moscow Geological Prospecting Institute.
1964	Ph.D., International Economics, Moscow Academy of Foreign Trade.
1978	Ph.D., International Law, Moscow Juridical Institute, Russian Academy of Sciences.

Professional experience and activities

Present

Since 2001 *Consultant, Ministry of Natural Resources of the Russian Federation*

Advisory services on legal, scientific and technical matters concerning marine research, prospecting and exploration, and the law of the sea

Expert, Interoceanmetal Joint Organization (Szczecin, Poland)

International legal aspects of exploration activities in the international seabed area.

Previous

1992-2001 *Counsellor, Ministry of Natural Resources of the Russian Federation*

Advisory services on legal, scientific and technical matters concerning marine research, prospecting and exploration, and the law of the sea. Preparation of national legislation concerning the continental shelf, the exclusive economic zone and other sea areas of national jurisdiction; Ministry's representative in the Parliament and its bodies on the matters of drafting and consideration of national legislation on marine and mineral resources development. Coordination of environmental research projects in the pioneer area of the Russian Federation. International cooperation in marine research and prospecting.

Expert of Interoceanmetal Joint Organization, Szczecin, Poland

1988-1992 *Chief Expert, State Commission on Arctic and Antarctic Affairs of the Government of the USSR/Russian Federation* (since 1992)

Organization of the Government's activities in the Arctic areas, including scientific research, geological and mining activities, industrial development, environmental protection and international relations; supervision of Antarctic research.

1980-1988 *Director, Department of Ocean Mineral Resources, USSR Ministry of Geology*

Head of the USSR marine geological survey. Supervision and organization of USSR activities in the field of marine geology, prospecting and exploration, including petroleum and hard minerals prospecting and exploration (continental shelf), research and prospecting for polymetallic nodules and other minerals (deep seabed areas), delimitation of the outer limits of the continental shelf; geological research in Antarctica; research and development of marine prospecting and exploration technology; international relations and cooperation in marine geological research and prospecting, in Arctic and Antarctic affairs.

1971-1980 *Deputy Director, Marine Prospecting and Exploration Department, USSR Ministry of Geology*

Supervision and organization of USSR activities in the field of marine geology, prospecting and exploration, including petroleum and hard minerals prospecting and exploration (continental shelf), research and prospecting for polymetallic nodules and other minerals (deep seabed areas).

1967-1971 *Economic Affairs Officer, Secretariat of the United Nations Economic and Social Commission for Asia and the Far East, Bangkok*

Organization and coordination of national and regional projects for offshore petroleum and hard minerals prospecting and exploration in the continental shelf areas of Thailand, Malaysia, Indonesia, the Philippines and Viet Nam. Coordination of regional projects on the compilation of geological and related maps for Asia and the Far East and technical assistance to Nepal and India on mineral resources development.

1953-1967 *Senior Geologist, Aerogeology Enterprise, USSR Ministry of Geology*

Field geological survey and prospecting in the Pamirs and eastern Siberia.

Academic experience

1968-1971 Associate Professor of Geology, Chulalongkorn Royal University, Bangkok.

1972-1975 Lecturer on Marine Geology, Leningrad Mining Academy.

1992-1993 Lecturer on the law of the sea, training courses for trainees of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, Interoceanmetal Joint Organization, Szczecin, Poland.

International experience and conferences

1971-1973	Member of the USSR delegation at the United Nations Seabed Committee.
1974-1982	Member of the USSR delegation at the Third United Nations Conference on the Law of the Sea (responsible for continental shelf issues and Part XI).
1983-1988	Vice-Chairman of the USSR delegation at the sessions of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea
1985	Chairman of the USSR delegation which negotiated with France and Japan the problem of the overlapping of the pioneer sites in the Pacific.
1986-1987	Chairman of the USSR delegation which negotiated with Canada, Italy, the Netherlands, Belgium, the United States, the United Kingdom and Germany the problem of the overlapping of deep seabed mining sites for polymetallic nodules in the Pacific.
1988-1990	Negotiations with the Arctic States on the establishment of the International Arctic Science Committee (IASC).
1990-1991	Soviet representative to the Regional Council of IASC.
1991-1992	Meetings of the Arctic countries on the Arctic Environmental Protection Agreement.
1992-1993	Expert-consultant of the Interoceanmetal Joint Organization (IOM) at the sessions of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.
1995-2001	Member of the Russian delegation at the Meetings of States Parties to the United Nations Convention on the Law of the Sea and sessions of the Assembly of the International Seabed Authority.
1997-2001	Consultant to the International Seabed Authority (geology and mineral resource assessment of deep seabed mineral resources; protection of marine environment)
1997-2002	Chairman, Commission on the Limits of the Continental Shelf.

Publications

More than 24 publications on the geology and mineral resources of the continental shelf and deep seabed areas, and the law of the sea.

Lu Wenzheng (China)

Date and place of birth: 25 June 1944, Chongqing City, China.

Position: Professor of Marine Geophysics, Second Institute of Oceanography (SIO), State Oceanic Administration (SOA), Hangzhou, Zhejian Province, China. Member of the Commission on the Limits of the Continental Shelf.

Languages: Chinese, English and German.

Educational background

1961-1967	Department of Geophysics, China University of Geology

Professional career

1997-present	Member of the Commission on the Limits of the Continental Shelf
1995	Professor, Center for Geophysics, SIO.
1990-1995	Associate Professor, Center for Geophysics, SIO.
1991-1992	Visiting Scholar, Centre for Marine Geosciences Research (GEOMAR), Kiel, Germany.
1986-1990	Director of Centre for Geophysics, SIO.
1978-1990	Centre for Geophysics, SIO.
1970-1978	Desalination Centre, SIO.

Academic activities

2001	Member of Expert group on project "863 high technology" of China.
1996	Chief Scientist, Exploration Project for Polymetallic Nodules in the China Ocean Mineral Resources Research and Development Association (COMRA) pioneer area. Chief Scientist, MultiBeam topography survey for the East and South China seas.
1990-1996	Scientist in charge of the SeaBeam 2112.360 system and SIMRAD deep-tow system of R/V *Dayang* No. 1 for COMRA.
1989-1990	Study of the terrain system of the South China Sea by the State Natural Science Foundation.
1987-1988	Chief of Chinese Scientists, Sino-German Joint Survey for Geosciences in the South China Sea.
1985-1986	Geophysics Study for the first Chinese Antarctic and South Pacific Ocean expedition.
1983-1984	Magnetic, gravity and bathymetry study of the central South China Sea.
1980-1981	Magnetic, gravity and bathymetry study of the East China Sea.

Main publications

Normal geomagnetic field of the South China Sea. *Donghai Marine Science*, vol. 3, No. 3 (1984).

Characteristics of magnetic lineation and tectonic evolution of the South China Sea Basin. *Ocean silica*, vol. 4, No. 3 (1986).

Characteristics of the magnetic field of the Southeast Pacific and its tectonic evolution. *Proceedings of the International Symposium on Antarctic Research* (Shanghai Science and Technology Press).

Atlas of marine geology and geophysics of the Bohai, Yellow and East China seas (Ocean Press, 1989). Co-author.

Tectonic Origin and Evolution of the South China Sea Basin. *International Symposium on Geology and Geophysics Mapping in the Western Pacific*, 1989.

The Bransfield trough — a Cenozoic rift. *Antarctic research*, vol. I, No. 4.

Spreading age of Sub-basins in the South China Sea and their relationship. Marine geology and geophysics of the South China Sea. *Proceedings of International Symposium on the Geology and Geophysics of the South China Sea* (Ocean Press).

3-D seafloor topography characteristics and its tectonic origin in the Clarion-Clipperton block of the Eastern Pacific, *30th International Geological Congress.*

Report of relinquishment portion by COMRA.

Exploration report (first phase) on polymetallic nodules in the Chinese pioneer area.

Marine geology and characteristics of the polymetallic nodules belt in the Eastern Pacific. Co-author.

Research report on ocean resources, DY95-6 and DY95-8 cruises of R/V *Dayang* No. 1. Principal author.

Exploration and research report (second phase) on polymetallic nodules in the Chinese pioneer area. Principal author.

Topographical Atlas (by SeaBeam) of the western Chinese pioneer area.

Variations in seafloor topography and its tectonic origin in the eastern and western parts of the Chinese pioneer area. *Proceedings of the Symposium on the Ocean Resources Research of COMRA* (Ocean Press, 2001).

Characteristics of polymetallic deposits in the Chinese pioneer area and the exploration strategy for the third phase. *Proceedings of the Symposium on the Ocean Resources Research of COMRA* (Ocean Press, 2001).

Topographical character and distribution of the unsuitable mining areas in the Chinese pioneer area. *Proceedings of the Symposium on the Ocean Resources Research of COMRA* (Ocean Press, 2001). Co-author.

Park Yong-Ahn (Republic of Korea)

Date of birth: 1 January 1937.

Education

1964	M.S. in Stratigraphy and Sedimentation, Seoul National University.
1966	M.S. in Sedimentary Geology, Brown University, United States of America.
1973	Ph.D. in Marine Geology (continental shelf), Kiel University, Germany.

Experience

1967-present	Professor, Department of Oceanography, Seoul National University.
1978-1979	Visiting professor, Duke University, United States.
1978	Member of Special Committee for continental shelf exploitation and planning, Ministry of Energy and Resources, Republic of Korea.
1979-1982	Adviser for the law of the sea, Ministry of Foreign Affairs.
1975-1985	Occasional member of Republic of Korea delegation to Intergovernmental Oceanographic Commission.
1983-1985	President, Korean Society of Oceanography.
1996	Republic of Korea delegate to the IGCP-396 (Late Quaternary Records of Continental Shelves of the World), Sydney, Australia.
1996-present	Chairman of the Republic of Korea National Committee for IGCP.
1997-present	Chairman of the Republic of Korea-China Joint Committee for Basic Science Research.
1998-present	Member of the Ocean Drilling Project National Advisory Committee.
2001-present	Adviser and Republic of Korea delegate to IGCP-464 (Late Quaternary Continental Shelf and its Implications for the Glacial Cycle).

Membership in professional societies

Society for Sedimentary Geology, United States.

Korean Society of Oceanography.

Geological Society of Korea.

Korean Quaternary Association.

American Geophysical Union.

International Association of Sedimentologists.

Languages

Korean, English, German.

Honours

Distinguished Scientific Paper Award, Korean Society of Oceanography, 1987.

Note of Commendation (Geological Oceanography) from the President of the Republic of Korea, 1989.

Order of Service Merit (red stripes) from the President of the Republic of Korea, 2001.

Major publications

International Academic Research Papers

Park, Y.A., 1974. Migration and textural parameters of intertidal channel sand bars in the tidal environments near Sylt, Schleswig-Holstein (F.R.Germany). Meyniana, 24. 73-89

Park, Y.A. and Pilkey, O.H., 1981. Detrital mica: Environmental significance of roundness and grain surface textures. Jour. of Sedimentary Petrology, 51(1).

Klein, G. deV., **Park, Y. A.,** Chang, J.H. and Kim, C.S., 1982. Sedimentology of a subtidal, tide-dominated sand body in the Yellow Sea, Southwest Korea. Marine Geology, 50: 221-240

Park, Y.A., J.T. Wells and O.K. Huh, 1983. Dispersal of silts and clays by winter monsoon surges in the southeastern Hwanghai Sea. Proceedings of int. Symposium. p.462-472, Springer-Verlag(New York)

Bloem, A.L., and **Park, Y.A.**, 1985. Holocene sea-level history and tectonic movement, Republic of Korea. Quaternary Research (Japan), 24: 77-84

Park, Y.A., Wells, J.T. and Choi, J.H., 1985. Storm-induced fine sediment transport, west coast of South Korea. Geo-Marine Letters, 5:

Park, Y.A., Kim, S.C. and Choi, J.H.. The distribution and transportation of fine-grained sediments on the inner continental shelf off the Keum River Estuary, Korea. Continental Shelf Research, 5(4): 499-519.

Park, Y.A., Lee, C.S and Song, Y.I., 1986. The lowest stand of the Holocene sea-level along the continental margin off the eastern and southeastern coast of Korea. Late Quat. Sea-level Changes, China Ocean Press, p. 239-351

J.D. Milliman, **Park, Y.A.**, and Y.S. Qin, 1989. Sediments and sedimentary processes in the Yellow and East China Seas. Sedimentary Facies in the Active Plate Margin, ed. by F. Masuda, Tsukuba Univ. Tsukuba, Japan.

Park, Y.A., and J.Y. Choi, 1989. Mechanism and distribution patterns of the fine-grained suspended materials off the southeast coast of Korea. Acta Oceanographica Taiwanica, No.24: 52-64

Park, Y.A., and B.K. Khim, 1990. Clay minerals of the recent fine-grained sediments on the Korean continental shelves. Continental Shelf Research. 10(12): 1179-1191.

Wells, J.T., Adams, C.E., **Park, Y.A.**, and Frankenburg, E.W., 1990.
Morphology, sedimentology, and tidal-channel processes on a high-tidal-range mudflat, west coast of Korea. Marine Geology, 95: 111-130.

Adams, C.E., Wells, J.T. and **Park, Y.A.**, 1990. Internal hydraulics of a sediment-stratified channel flow. Marine Geology, 95: 131-145

Alexander, C.R., Nittrouer, C.A., Demaster, D.J., **Park, Y.A.** and Park, S.C., 1991. Macrotidal mudflat of the south western Korean coast. Jour. Sediment. Petrol., 61: 805-824.

Park, Y.A. and Khim, B.K., 1992. Smectite as a possible source-indicative clay mineral in the Yellow Sea. Geo-Marine Letters, 12: 228-231.

Khim, B.K. and **Park, Y.A.**, 1992. Origin and dispersal of recent clay minerals in the Yellow Sea. Marine Geology, 104(1-4): 205-213.

Wells, J.T. and **Park, Y.A.**, 1992. Observation on shelf and subtidal channel flow: implications of sediment dispersal seaward of the Keum River Estuary, Korea. Estuarine, Coastal and Shelf Science, 34: 364-379.
Adams, C.E. Jr., Wells, J.T. and **Park, Y.A.**, 1993. Wave motions on a lutocline above a stably stratified bottom boundary layer. Coastal and Estuarine Studies, 42: 393-410.

Park, Y.A., Wells, J.T. Kim, B.W. and Alexander, C.R., 1995. Tidal lamination and facies development in the macrotidal flats of Namyang Bay, west coast of Korea. Spec Publs. International Ass. Sediment(IAS), 24: 183-191

Park, Y.A. and H.-I. Yi, 1995. Late Quaternary Climatic Changes and Sea-level History along the Korean Coasts. J. Coastal Res. Spec. Issue No. 17: Holocene Cycles: Climate. Sea Levels, and Sedimentation. 163-168

Park, Y.A., Chang, J.H., Lee, C.H. and Han, S.J., 1995. Controls of storm and typhoon on Chenier formation in Komso Bay, Western Korea. J. Coastal Res., 12(4). 817-822

Park, Y.A., Choi, K.S. and Choi, J.Y., 1995. Signatures of the sea-level fluctuations recorded in the innershelf deposits in the eastern margin of the Yellow Sea(Korean West Sea). Yellow Sea Research, 1: 17-24

Zhao, Y.-Y., **Park, Y.A.,** Qin, Y.-S., Gao, S., Zhang, F.-G. and Yu, J.-J., 1997. Recent development in the southern Yellow Sea sedimentology: China-Korea Joint Investigation. Yellow Sea Research, 3: 47-51

Park, Y.A., D.I. Lim, B.K. Khim, J.Y. Choi and S.J. Doh, 1998. Stratigraphy and Subaerial Exposure of Late Quaternary Tidal Deposits in Haenam Bay, Korea (Southwestern Yellow Sea). Estuarine Coastal and Shelf Science, 47: 523-533

Lee, H.J., Y.S. Chu, **Y.A. Park,** 1999. Sedimentary processes of fine-grained material and the effect of seawall construction in the Daeho macrotidal flat-nearshore area, northern west coast of Korea. Marine Geology, 157. 171-184

Park, Y.A. and K.S. Choi, 2000. Late Quaternary stratigraphy of the muddy tidal deposits, west coast of Korea. In Terry Healy and Ying Wang (eds) Muddy Coasts of the World Processes, Deposits and Function. Ch. 21. Elsevier (Amsterdam) (in press)

Khim, B.-K., K.S. Choi and **Y.A. Park,** 2000. Elemental composition of siderite grains in early Holocene deposits of Youngjong Island (west coast of Korea) and its palaeoenvironmental implications. In B.W. Flemming, M.T. Delafontaine and G. Dhong-Il Lim, Yong-Ahn Park, Jin-Young Choi, J. W. Cho, B. K. Khim, 2000, Glauconite grains of the continental sediments around Korean peninsula and their depositional implications, Geo-Marine Letters, 20(2), pp 80-86

Y.A. Park, Jin-Yong Choi and S. Gao, 2001, Spatial variation of suspended particulate matter in the Yellow Sea. Geo-Marine Letters, 20(4), pp 196-200

Kyung Sik Choi, Baeck Oon Kim, **Yong-Ahn Park,** 2001, Late pleistocene tidal rhythmites in Kyunggi Bay, west coast of Korea: A comparison with simulated rhythmites nased on modern tides and implications for intertidal postioning. Journal of Sedimentary Research, 71(5), pp 681-692

International Conference Papers

Park, Y. A., B.K. Kim and S.C. Park, 1990. Origin and distribution patterns of muddy deposits in the Yellow Sea. In: Asian Marine Geology, China Ocean Press, Beijing, p. 335-350.

Park, Y.A. and J.T. Wells, 1991. Morphology and tidal channel processes on a high-tide-range mudflat, west coast of Korea. The 2nd International Simposium on Marine Science of the Yellow Sea, Qingdao, p. 35.

Park, Y.A., 1991. Late Quaternary sea level history and related sedimentary processes on the continental shelf off the south eastern coast of Korea. 13th INQUA Congress. Beijing, China, p. 271.

Park, Y. A., 1991. Subtidal sedimentation in the so-called Saemankum offshore, south of Kunsan, Korea. JECSS-VI Workshop. Fukuoka, Japan, p. 7.

Park, Y.A., 1992. Ordovician shallow marine clastic sedimentation, Sandong, Kangweondo, Korea. 2nd International Conf. on A.M.G., Tokyo, Japan, Abst., 02-1

Park, Y.A., J.T. Wells and B.W. Kim, 1992. Morphology and sedimentary structures (lamination) of a macrotidal mudflat, west coast of Korea. Tidal Clastice-92, Whilhelmshaven, Germany, Abst., p. 68.

Park, Y.A. and Wells, J.T., 1993. High-tide-range mudflat and tidal lamination, west coast of Korea. Senckenbergia (in print)

Park, Y.A., 1993. Climate change and sea level fluctuation in the Yellow Sea basin. Ciram-Pacific Inter. Symposium, p. 19-20.

Park, Y.A. and K.S. Choi, 1993. Depositional environments of the late Pleistocene marine deposits off the western coast of Korea. SEPM '93 Meeting, p. 6-7

Park, Y.A., 1993. Science and development technology of marine resources. 3rd Inter. Sea Power Symposium, p. 1-8.

Park, Y.A., 1993. Sea-level changes in the eastern Yellow Sea. 7th JECSS Inter. Symposium, p. 51-52.

Park, Y.A. and J.H. Chang, 1994. Macrotidal chenier development in the Komso Bay, western Korea. IPCP-367, International Symposium Abstract, p. 17, University of Durham.

Park, Y.A., 1994. Tidal flat sedimentation along the west coast of Korea - with special reference to Nam Yang Bay - Western Pacific Geophysics Meeting, Abstract, p. 41. University of Hong Kong.

Park, Y.A., 1995. Unconformable boundary between the Holocene and preHolocene tidal deposit in the Cheonsoo Bay, west coast of Korea. INQUA XIV International Congress, Frei University, Berlin, Germany, 95.8.5.

Park, Y.A., 1995. Typhoon deposits in a coastal zone, western coast (Yellow Sea) Korea. IGCP-367 Annual Meeting, Antofagasta University, Chile, 95.11.21.

Park, Y.A., B.K. Khim, D.W. Nam, J.Y. Choi and H.-S. Moon, 1996. Dipersal of recent fine-grained sediments in the East Sea continental margin, Korea. Proceedings of the Third International Conference on Asian Marine Geology, p. 25-34.

Choi, K.S. and **Y.A. Park,** 1996. Lithostratigraphy and depositional environment of the coastal deposits in the Youngjong-do tidal flat, west coast of Korea. Tidalite 96, International Conference on Tidal Sedimentology, Savannah, Georgia, USA, 96.5.12-16. p. 126.

Khim, B.-K., K.S. Choi and **Y.A. Park,** 1997. Textural and geochemical properties of the diagenetic siderite grains in the Early Holocene tidal deposits: implications for depositional environments. Muddy Coasts '97, International Senckenberg Conference on Hydrology, Sedimentology, Geochemistry, and Ecology of Muddy Coasts, Wilhelmshaven, Germany, 97.9.1-5, p. 119

Choi, K.S. and **Y.A. Park,** 1997. Late Quaternary Lithostratigraphy of Sedimentary Sequences developed adjacent to Youngjong-Yongyou Islands, West Korea. Muddy Coasts '97, International Senckenberg Conference on Hydrology, Sedimentology, Geochemistry, and Ecology of Muddy Coasts, Wilhelmshaven, Germany, 97.9.1-5,.

Park, Y.A. Subaerial Exposure and Alteration (Weathering) of Pre-Holocene Marine Deposit in the Haenam Bay and Hampyung Bay, West Coast of Korea. 4th IOC/WESTPAC International Scientific Symposium, Okinawa, Japan, 98.2.2-7.

Books

Park, Y.A. et al., 1970. Introduction to Earth Science, 480pp., published by Kyohak-Sa.

Park, Y.A., 1976. Ocean (Endless Purpose), 301pp. published by Korea Research Foundation.

Park, Y.A., et al., 1976. Introduction to Oceanography, 465pp., published by National Textbook Press.

Park, Y.A., 1983. Laboratory Guide for Geological Oceanography and Sedimentology, 149pp., published by Chipmoon-Dang.

Park, Y.A., et al., 1983. Earth Science I and II, published by Ministry of Education.

Park, Y.A., et al., 1987. Geology of Korea, 650pp., published by Kyohak-Sa.

Park, Y.A., et al., 1989. Principles of Geology, 662pp., published by Woosung Cultural Press.

Park, Y.A., et al., 1992. Earth Science I and II, Dong-A Press.

Park, Y.A., 1998. Principles of Oceanography, 417pp., published by Seoul National University Press.

Park, Y.A., 1999. (translation), The Ocean Atlas, 64pp., published by Kirinwon (Seoul. Korea)

Park, Y.A., 2001. The Quaternary Environment of Korea, published by Seoul National University Press.

Park, Y.A., 2001. The Tidal Environment of Korea. published by Seoul National University Press.

** Also over 100 research papers and reports on the continental shelf were published in Korean academic journals.

Fernando Manuel Maia Pimentel (Portugal)

Personal information

Date of birth: 24 July 1960.

Languages

Portuguese: native speaker.

English: fluent, spoken and written.

French: fair, spoken and written.

Spanish: easy understanding.

Education and professional experience

1984-1986

Degree in Naval Sciences (major field: Oceanology), Portuguese Naval Academy, Lisbon, 1984.

Executive Officer of a coastal patrol vessel of the Portuguese Navy, 1984-1986.

After leaving the Naval Academy, spent two years in sea duty, on missions of fisheries control, search-and-rescue and anti-smuggler actions.

1986-1989

Specialization course in Hydrography (FIG/IHO category A), Instituto Hidrográfico, Lisbon, 1986-1987.

Second in Command of a hydrographic team, Portuguese Navy, 1987-1989.

Participation in several hydrographic surveys (portuary, coastal and oceanic) in continental Portugal, the Azores and Madeira archipelagos and the Republic of Cape Verde. This included the planning, field execution (both as surveyor and survey director) and data processing.

1989-1992

Degree of Master of Science in Physical Oceanography (major and thesis in Underwater Acoustics), Naval Postgraduate School, Monterey, California, United States of America, 1989-1991.

Degree of Hydrographic Engineer (with final report on Multibeam Echosounder Systems), Instituto Hidrográfico/Portuguese Engineering Association, Lisbon, 1991-1992.

The main product of this educational period was the development of guidelines for the definition of decision criteria for the future acquisition of multibeam echosounder systems for the Instituto Hidrográfico and the Portuguese Navy survey ships. For this, the theoretical studies were complemented with short cruises on board some foreign ships which were already operating multibeam echosounders, and talks with several equipment manufacturers.

1992-1998

Officer-in-Charge for "Hydrographic Equipments, Systems and Methods", Hydrography Division, Instituto Hidrográfico, Lisbon, 1992-1997.

Officer-in-Charge for "Geomatics" (Hydrographic Data Management and Nautical Charting), Hydrography Division, Instituto Hidrográfico, Lisbon, 1997-1998.

Officer-in-Charge for Special Projects, Hydrography Division, Instituto Hidrográfico, Lisbon, 1992-1998:

- **Differential GPS for hydrography, 1992-1996**
- **Multibeam echosounder systems, 1992-1997**
- **Hydrographic data acquisition and processing systems, 1995-1997**
- **GPS for geodesy, 1995-1998**
- **Quality assessment of hydrographic data, 1995-1998**
- **Electronic Navigational Chart (ENC) production system, 1997-1998**

Was in charge of the technical aspects of the re-equipment of the Instituto Hidrográfico with regard to the acquisition and processing of hydrographic data. This included the renewal of equipments for marine and land positioning, echosounders systems and the respective survey control and processing software. Attended the first Coastal Multibeam Training Course offered by the University of New Brunswick, Canada. The main achievement was the installation, extensive testing and utilization of a multibeam echosounder with a combined GPS/inertial system for positioning and attitude, constituting the survey data which were transferred to the computer-assisted cartography system CARIS. Was also in charge of the definition of the data flow and production system for the ENC. Author of many internal reports and norms concerning the application of new methods, equipment and software to hydrographic surveying, in accordance with internationally accepted standards.

1998

Head of the Hydrography Division, Instituto Hidrográfico, Lisbon, Portugal.

Was in charge of the planning and quality control of hydrographic surveys, hydrographic data management and nautical chart production (in paper and ENC), and head of the Representative Group for IHO Affairs. Was involved in several projects using CARIS, in particular its module CARIS LOTS, specially designed for UNCLOS applications. Was also involved in the definition and acquisition of hydrographic equipment for the survey ships of the Portuguese Navy, namely, as President of the Commissions for the acquisition of the deepwater multibeam echosounder, the deepwater singlebeam echosounder and the positioning and attitude system.

Special assignments and activities

Member of the IHO Working Group on the *IHO Standards for Hydrographic Surveys* (S-44), 1994-2001.

Active participant in the work of the technical experts group that defined the international standards for the planning, execution and processing of hydrographic surveys and produced the fourth edition (1997) of the IHO publication S-44.

Member of the IHO Worldwide Electronic Navigational Chart Database (WEND) Committee, 1999-2001.

Active participant in the work of the IHO WEND Committee, regarding the international development and harmonization of procedures for the production and delivery of ENC.

Representative of the Instituto Hidrográfico for the Eastern Atlantic Hydrographic Commission and the Southern Africa and Islands Hydrographic Commission, 1994-2001.

Participated as a technical expert for hydrography and cartography in the IOC/IHO project entitled "International Bathymetric Chart of the Central and Eastern Atlantic" (IBCEA), Instituto Hidrográfico, Lisbon, 1998-2001.

Technical expert for hydrography and cartography in the initial evaluation studies by the Portuguese Commission for the Continental Shelf, in accordance with UNCLOS (hydrographic coverage and use of CARIS LOTS), Instituto Hidrográfico, Lisbon, 1998-2000.

Technical cartographic expert in the studies prefatory to the delineation of the East Timor coastline and jurisdictional waters, Instituto Hidrográfico/Portuguese Ministry of Foreign Affairs, Lisbon, 2000-2001.

Technical expert for hydrography and cartography in studies related to the Portuguese coastline and jurisdictional waters, in accordance with UNCLOS, Instituto Hidrográfico/Portuguese Ministry of Foreign Affairs, Lisbon, 2000-2001.

Instructor for the specialized course in Hydrography entitled "Geodesy, geodetic surveying and hydrographic surveying", Instituto Hidrográfico, Lisbon, 1993-2001.

Supervisor of final graduation reports of students in Geographic Engineering of the University of Lisbon, in: Differential GPS (1992), Geodetic Methods with GPS (1995) and Digital Cartography (2000, 2001).

Supervisor of final reports for the degree of Hydrographic Engineer of Portuguese Naval Officers for the degree of Master of Engineering in Geodesy and Survey Engineering (University of New Brunswick, Canada), in: Quality Assessment of Multibeam Data (1998), Real Time Kinematic GPS (2000) and ENC Production (2000).

Professor (Probability and Statistics, Geodesy and Chart Projections, Analysis and Processing of Time Series, Underwater Acoustics), Universidade Lusófona de Humanidades e Tecnologias, Lisbon, 1998-2001.

Special courses and conferences/meetings

Special courses

Coastal Multibeam Training Course, University of New Brunswick, St. Andrews, Canada, 1994.

SIMRAD EM-950 Multibeam Echosounder Operation and Maintenance Courses, SIMRAD AS, Instituto Hidrográfico, Lisbon, 1995.

SIMRAD MERLIN/NEPTUNE Software Operator Course, SIMRAD AS, Instituto Hidrográfico, Lisbon, 1995.

General Naval Warfare Course, Portuguese Naval War College, Lisbon, 1996.

International conferences/meetings

HYDRO '92, Copenhagen, Denmark, 1992.

US-HYDRO '94, Norfolk, Virginia, United States of America, 1994.

SIMRAD FEMME '95, Biloxi, Mississippi, United States of America, 1995.

SIMRAD FEMME '97, Monaco, 1997.

Workshop on Coastal and Inland Waterways (Electronic Chart Display and Information System (ECDIS)), Norfolk, Virginia, United States of America, 2001.

US-HYDRO '01, Norfolk, Virginia, United States of America, 2001.

IHO conferences/meetings

Fourth Conference of the Eastern Atlantic Hydrographic Commission, Lisbon, 1994.

Fifteenth International Hydrographic Conference, Monaco, 1997.

Second Meeting of the IHO Working Group on S-44, Monaco, 1997.

European Regional Electronic Navigational Chart (RENC) Coordination Centre, Advisory Committee, Stavanger, Norway, 1999.

Second Conference of the Southern Africa and Islands Hydrographic Commission, Cape Town, South Africa, 1999.

Fifth IHO WEND Meeting, Monaco, 2000.

IHO/Industry Interface Meeting, Monaco, 2000.

Second Extraordinary International Hydrographic Conference, Monaco, 2000.

IHO Strategic Planning Working Group Informal Meeting, Monaco, 2000.

Sixth Conference of the Eastern Atlantic Hydrographic Commission, Cadiz, Spain, 2000.

IHO Meeting for Cooperation in Hydrography and Aids to Navigation with the Western and Central Africa Countries, Lisbon, 2001.

European RENC Advisory Committee, Paris, 2001.

Sixth IHO WEND Meeting, Norfolk, Virginia, United States of America, 2001.

Third Conference of the Southern Africa and Islands Hydrographic Commission, Maputo, 2001.

Military career

Ranks

Midshipman, 1984.

Second Lieutenant, 1985.

First Lieutenant, 1988.

Lieutenant-Commander, 1993.

Commander, 2001.

Decorations

Medal of Merit (Second Class), 1996.

Medal of Distinguished Services (Silver), 1999.

Present fields of interest

Geostatistics and Geophysical Signal Processing.

Computational Intelligence Methods (Soft Computing) in GIS data analysis.

Publications

In English

"Analytical modelling of the deep ocean vertical stability and comparison with data collected off Point-Sur". Internal report, Department of Oceanography, Naval Postgraduate School, Monterey, California, United States of America, 1991.

"Computation of acoustic normal modes in the ocean using asymptotic expansion methods". Master's thesis, Naval Postgraduate School, Monterey, California, United States of America, 1991.

"Overview of the Multibeam Hydrographic Surveying Project at the Portuguese Hydrographic Office for Nautical Chart Update". Proceedings of SIMRAL FEMME '99, Oslo, 1999.

"Multibeam accuracy tests at dry dock". *Hydro International*, vol. 5, No. 7, October 2001.

In Portuguese

"Acoustical methods for the exploration of resources and bottom morphology of the exclusive economic zone". *Proceedings of the Fifth Jornadas Técnicas de Engenharia Naval, Instituto Superior Técnico, Lisbon, 1992.*

"Multibeam echosounder systems". *Anais do Instituto Hidrográfico, Lisbon, 1992.* *Introductory Course to Multibeam Echosounders.* Internal instruction manual, Instituto Hidrográfico, Lisbon, 1994.

"Methods for correction of hydrographic surveys with automated data acquisition systems". Internal report, Instituto Hidrográfico, Lisbon, 1995.

"Installation of a multibeam echosounder system on the R/V *Coral*". Internal report, Instituto Hidrográfico, Lisbon, 1995.

Correction of hydrographic surveys for real sound speed profiles". Internal norm, Instituto Hidrográfico, Lisbon, 1996.

"Calibration of echosounders in oceanic surveys". Internal norm, Instituto Hidrográfico, Lisbon, 1997.

"Horizontal control with GPS". Internal norm, Instituto Hidrográfico, Lisbon, 1997.

"Planning, execution and processing of hydrographic surveys". Internal norm (In accordance with IHO S-44, 4th ed.), Instituto Hidrográfico, Lisbon, 1999.

Philip Alexander Symonds (Australia)

Date of birth

9 May 1949.

Languages

English — native; German — minimal reading and speaking; French — minimal reading and speaking.

Present position

Principal Research Scientist; Petroleum and Marine Division (PMD), Geoscience Australia (GA) (formerly Australian Geological Survey Organization (AGSO)).

Academic qualifications

B.Sc. Geology and Geophysics, 1969, University of Tasmania.

B.Sc. (Hons. 1st), Geophysics, 1971, University of Tasmania.

Career summary

1970-1971	Cadet Geophysicist, Australian Bureau of Mineral Resources (BMR).
1971-1984	Science 1 — Science 3 (Geophysicist) BMR.
1984-1986	Research Scientist, BMR, Marine Division.
1986-1991	Senior Research Scientist, BMR, Marine Division.
1991-present	Principal Research Scientist, Petroleum and Marine Division, GA/AGSO.

HONOURS, AWARDS

Mount Lyell Prize for Geology, 1969
Christopher Holmes Memorial Prize, 1969
Australian Public Service Cadetship, 1970
PESA Best presented paper, APEA 1988 (co-author)
1991 Australia Day Achievement Award (research on N.E. Australian margin)
1995 Australia day Achievement Award (for studies related to the definition of Australia's continental shelf under UNCLOS)
1997 Distinguished AGSO Lecturer and Harold Raggatt Award (for work involved in definition of the outer limit of Australia's continental shelf under UNCLOS)

POSITIONS HELD ON COMMITTEES

Australian ODP Scientific Committee 1988-92
Chairman, Australian ODP Scientific Committee 1993-96
Chairman and Co-chairman of Marine Geoscience & Petroleum Geology Future Program Committee, 1989-93
International JOIDES Tectonics Panel, Australian/Canadian member 1992-95
Member of UN Group of Technical Experts on the Definition of the Continental Shelf, New York, March 1993
Member of UN Group of Technical Experts on the Preparations for the Establishment of the Commission on the Limits of the Continental Shelf, New York, Sept. 1995
Member of Australian delegation for Australia/Indonesia maritime boundary negotiations, 1993-97
Editorial Committee for IOC/IHO book – "Continental Shelf limits",
Member of Australian delegation for Australia/New Zealand maritime boundary negotiations, 2000-

MEMBERSHIP OF PROFESSIONAL SOCIETIES

Member, Petroleum Exploration Society of Australia

WORK EXPERIENCE WITH OTHER COUNTRIES

Germany, U.S.A., Spain, Norway, France, New Zealand, Mauritius

EMPLOYMENT RECORD SUMMARY (Highlights relevant to UNCLOS)

From: 1994 to present
Employer: Geoscience Australia (GA) (formerly Australian Geological Survey Organisation (AGSO))
Position held: Principal Research Scientist, Petroleum and Marine Division
Description of duties:

Law of the Sea Project Leader - scientific leader and manager of this high-profile AGSO project in charge of all aspects of the scientific activities related to definition of the outer limits of Australia's extended continental shelf beyond 200 nautical miles - data acquisition and processing; interpretation; Article 76 analysis; boundary definition. Activities involve:

- Optimum definition of the legal continental shelf around Australia and its territories.
- Assistance in formulation of policy and negotiation on maritime boundaries and in the definition of Australia's offshore jurisdiction through improved understanding of morphology, geology and non-living resource potential of the continental margin and adjacent ocean basins around Australia and its territories.
- Ensuring that Australian Government decisions, policy formulation and implementation, and offshore resource management under the Oceans Policy and Marine Science and Technology Plan, are based on the best available geoscientific and technical information.
- Maritime boundary and related negotiations between Australia and adjacent coastal States – Indonesia, New Zealand.
- Representing Australian at United Nations meetings and other international activities on Continental Shelf definition under UNCLOS
  - Invited member of UN Group of Technical Experts on the Preparations for the Establishment of the Commission on the Limits of the Continental Shelf, New York, Sept. 1995.

- Member of the IOC/IHO editorial committee for the book "Continental Shelf limits – the scientific and legal interface", 1996-1999.
- Open meeting of the Commission on the Limits of the Continental Shelf, May 2000.
- Invited participant in Continental Shelf Conference, Argentina, Nov. 2000.
- Presented papers at several international technical meetings on Law of the Sea – Geodetic Aspects of Law of the Sea, Bali, 1996; Advisory Board on Law of the Sea, Monaco, 1998.

- Provision of advice to other countries on continental shelf definition under UNCLOS – New Zealand, Mauritius, Argentina.

From: 1991 to 1994
Employer: Australian Geological Survey Organisation (AGSO, formerly Bureau of Mineral Resources)
Position held: Principal Research Scientist, Marine, Petroleum & Sedimentary Resources Division
Description of duties:

- In charge of major scientific and resource-related projects investigating sedimentary basin and continental margin development off northeast and northwest Australia involving international and national collaboration.
- Member of international JOIDES Tectonic Panel 1992-95 and Chairman of Australian Ocean Drilling Program (ODP) Scientific Committee 1993-96.
- In charge of AGSO's Law of Sea and seabed boundary activities and technical advice to Australian government:
  - Member of Australian delegations involved in Australia/Indonesia seabed boundary negotiations.
  - Invited member UN Group of Technical Experts on the Definition of the Continental Shelf, 1993.
  - Invited speaker at 27th Annual Conference of the Law of the Sea Institute, Seoul, 1993.

From: 1986 to 1991
Employer: Bureau of Mineral Resources (BMR)
Position held: Senior Research Scientist, Marine Geoscience and Petroleum Geology Program (MGPG)
Description of duties:

- Leader of continental margin, sedimentary basin and carbonate platform research off northeast Australia and in the Great Barrier Reef region:
  - Participated on ODP scientific drilling leg off northeast Australia.
- Extensional tectonics research – global and Australian margin.
- In charge of AGSO's Law of Sea and seabed boundary activities and technical advice to government – publications on Australia's jurisdiction and resource potential beyond 200 nautical miles.

From: 1984 to1986
Employer: Bureau of Mineral Resources
Position held: Research Scientist, MGPG
Description of duties:

- Continental margin research and petroleum resource potential over the whole Australian margin.
- Sedimentary basin and carbonate platform research focussing on the northeast Australian margin and the Great Barrier Reef region.
- International collaborative research with Germany on the Lord Howe Rise off eastern Australia.
- Australian technical expert on Law of Sea and seabed boundary matters.

From: 1980 to 1984
Employer: Bureau of Mineral Resources
Position held: Science 3 (Geophysicist), MGPG
Description of duties:

- Great Barrier Reef research.
- Continental margin research in the Coral Sea Basin region in collaboration with Germany.
- Australian technical expert on Law of Sea and seabed boundary matters.

From: 1973 to 1980
Employer: Bureau of Mineral Resources
Position held: Science 2 (Geophysicist); Geophysics Division, Seismic, Gravity & Marine Section
Description of duties:

- Continental margin research and mapping/surveying of Australia's margin – western and eastern Australian margins and Lord Howe Rise.
- Australian technical adviser on Law of Sea and seabed boundary matters:
    - Member of Australian delegation for France/Australia maritime delimitation negotiations.
    - Technical adviser to Australian Government throughout negotiations leading to Article 76 of UNCLOS during the Third United Nations Conference on the Law of the Sea.

From: 1971 to 1973
Employer: Bureau of Mineral Resources
Position held: Science 1 (Geophysicist), Geophysics Division, Seismic, Gravity & Marine Section
Description of duties

- Surveying and mapping the whole of Australia's margin - Continental Margins Survey:
    - BMR on-board representative during data collection on many surveys.
    - Data processing and interpretation, particularly off eastern Australia.

From: 1970 to 1971
Employer: Bureau of Mineral Resources
Position held: Cadet Geophysicist
Description of duties:

- Honours studies in geophysics at University of Tasmania on terrestrial heatflow and modes of granitic body emplacement using gravity techniques in northeast Tasmania.

RESEARCH INTERESTS

- Scientific and technical aspects of maritime boundary definition, in particular the outer limits of the continental shelf.
- Nature and development of continental margins and their resource potential.
- Nature of continent/ocean boundaries and transition zones.
- Geoscience aspects of environmental and resource management, and sustainable development of marine jurisdictions.

PUBLICATIONS, PRESENTATIONS AND CONFERENCES/SYMPOSIA

Mr Symonds is an author of over 110 papers and reports and over 90 abstracts and extended abstracts in national and international journals and report series. He has also produced numerous professional opinions, maps, internal reports and discussions papers on many aspects of continental margins and their resource potential, particularly on maritime boundary delimitation and the determination of the outer limits of the continental shelf under UNCLOS. He has participated in over 50 national and international conferences and symposia, and presented papers and posters at many of these.

A selection of his publications/reports on continental margins, particularly those related to definition of the outer limit of the continental shelf, is given below, as well as a list of recent Law of the Sea related conferences that he has attended.

MARINE SURVEY EXPERIENCE

Mr Symonds has over 22 months sea-going survey experience on geophysical, geological and scientific drilling cruises involving national, international and contract vessels, and was cruise leader or co-chief scientist on many of these. A number of the surveys involved international collaboration using both Australian and foreign vessels.

SELECTED PUBLICATIONS ON CONTINENTAL MARGINS
(Including those relevant to UNCLOS Continental Shelf Definition (*))

Symonds, P.A., Fritsch, J., & Schluter, H-U., 1983 - Continental margin around the western Coral sea basin: structural elements, seismic sequences and petroleum geological aspects. *Transaction Vol. 3rd Circum-Pacific Energy and Mineral Resources Conference, Honolulu, 1982*, 243-252.

Symonds, P.A., Davies, P.J., & Parisis, A., 1983 - Structure and stratigraphy of the central Great Barrier Reef. *BMR Journal of Australian Geology & Geophysics*, 8(3), 277-291.

Lister, G.S., Etheridge, M.A., & Symonds, P.A., 1986 - Application of the detachment fault model to the formation of passive continental margins. *Geology*, 14, 246-250.

Etheridge, M.A., Symonds, P.A., Powell, T.G., & Lister, G.S., 1988 - Application of the detachment model for continental extension to hydrocarbon exploration in extensional basins. *APEA Journal*, 28, 167- 187.

Davies. P.J., Symonds. P.A.. Feary. D.A.. & Pigram. C.J.. 1988 - Facies models in exploration - the carbonate platforms of northeast Australia. *APEA Journal*, 28. 123-143.

*Symonds, P.A., & Willcox, J.B., 1989 - Definition of the continental margin using U.N. Convention on the Law of the Sea (Article 76), and its application to Australia. *Bureau of Mineral Resources, Australia, Record*, 1988/38, 24p.

*Symonds, P.A., & Willcox, J.B., 1989 - Australia's petroleum potential in areas beyond an Exclusive Economic Zone. *BMR Journal of Australian Geology & Geophysics*., 11(1), 11-36.

*Symonds, P.A., & Willcox, J.B., 1989 - Mapping of the Australian continental margin using the United Nations Convention on the Law of the Sea, and its resource implications. *1989 BMR Research Symposium Proceedings, 6p.*

*Symonds, P.A., & Willcox, J.B., 1989 - Mapping of the Australian continental margin using the United Nations Convention on the Law of the Sea. *1989 BMR Research Symposium Proceedings*, 6p.

Etheridge, M.A., Symonds, P.A., & Lister, G.S., 1990 -Application of the detachment model to reconstruction of conjugate passive margins. *In,* Extensional tectonics and stratigraphy of the North Atlantic margins. *AAPG Memoir*, 46, 23-40.

Falvey, D.A., Symonds, P.A., & others, 1990 - Australia's deepwater frontier petroleum basins and play types. *APEA Journal*, 30, 238-262.

Lister, G.S., Etheridge, M.A., & Symonds, P.A., 1991 - Detachment models for the formation of passive continental margins. *Tectonics*, 10, 1038-1064.

Jarrard, R.D., & Symonds, P.A., 1993 - Origin of seismic reflectors within carbonate-rich sediments from north-eastern Australian margin. *In,* McKenzie, J.A., Davies, P.J., Palmer-Julson,A., & others. *Proceedings ODP Scientific Results, 133: College Station, TX (Ocean Drilling Program)*, 649-659.

Symonds P.A., 1993 - Underway and site-survey geophysics, Leg 133. *In,* McKenzie, J.A., Davies, P.J., Palmer-Julson,A., & others. *Proceedings ODP Scientific Results, 133: College Station, TX (Ocean Drilling Program)*, 819-851.

*United Nations, 1993. The Law of the Sea - Definition of the Continental Shelf: an examination of the relevant provisions of the United Nations Convention on the Law of the Sea. *UN Publication E.93.V.16, United Nations, New York*, 49p. (Symonds was a major contributor).

Colwell, J.B., Symonds, P.A., & Crawford, A.J., 1994 - The nature of the Wallaby (Cuvier) Plateau and other igneous provinces of the west Australian margin. *AGSO Journal of Australian Geology & Geophysics.*, 15(1), 137-156.

McDougall, I., Maboko, M.A.H., Symonds, P.A., & others, 1994 - Dampier Ridge, Tasman Sea, as a stranded continental fragment. *Australian Journal of Earth Sciences*, 41, 395-406.

Symonds, P.A., Collins, C.D.N., & Bradshaw, J., 1994 - Deep structure of the Browse Basin: implications for basin development and petroleum exploration. *In,* Purcell, P.G. and R.R (Eds), The Sedimentary Basins of Western Australia: *Proceedings of Petroleum Exploration Society of Australia Symposium, Perth* , 1994, 315-331.

Struckmeyer, H.I.M., Symonds, P.A., Fellows, M.E., & Scott, D.L., 1995 - Structural and stratigraphic evolution of the Townsville Basin, Townsville Trough, offshore north-eastern Australia. *AGSO Record,* 1994/50, 61p.

*Symonds, P.A., & Willcox, J.B., 1995 - The future of oceanic oil and gas: an Australian view. *Proceedings of the 27th Annual Conference of the Law of the Sea Institute, the Role of the Oceans in the 21st Century, Seoul, Korea, 13-16 July 1993.*

*Willcox, J.B., & Symonds, P.A., 1996 - The UN Convention on the Law of the Sea: what it means to Australia and Australia's marine industries. *In,* Tsamenyi, Bateman & Delaney (Eds), The UN Convention on the Law of the Sea: what it means to Australia and Australia's industries. *Wollongong Papers on Maritime Policy No. 3*, 85-105.

*Willcox, J.B., & Symonds, P.A., 1996 - The technical aspects of Continental Shelf delimitation. *Publication of Centre for Maritime Policy, University of Wollongong & Philippines Centre for Marine Affairs, Workshop, Manila, August 1996*, 29p.

O'Brien, G. W., Higgins, R., Symonds, P.A., Quaife, P., Colwell, J., & Blevin, L., 1996 - Basement control on the development of extensional systems in Australia's Timor Sea: an example of hybrid hard linked/soft linked faulting. *The APPEA Journal*, 161-201.

Symonds, P.A., Colwell, J., Struckmeyer, H., Willcox, J.B., & Hill, P., 1996 - Mesozoic rift basin development off eastern Australia. Mesozoic Geology of the Eastern Australian Plate conference, 23-26 Sept, 1996, Brisbane. *Geological Society of Australia Inc., Extended Abstracts* No. 43, 528-542.

*Willcox, J.B., & Symonds, P.A., 1997 - Deepwater prospectivity for petroleum in the Australian region. *Proceedings of the National Agricultural and Resources Outlook Conference 1997*, Vol. 3, 200-213.

*Symonds, P.A., 1997 - Law of the Sea: what does it mean for Australia? *Proceedings of the workshop on Marine Geoscience and the Australian Ocean Territory, Tectonics Special Research Centre, University of Western Australia*, 24-27.

*Symonds, P.A., Ramsay, D., Lockwood, K., & Borissova, I., 1997 - Defining the outer limits of Australia's resource jurisdiction - what's in it for petroleum explorers? *The APPEA Journal*, 37(1), Abstract, 819-820.

Struckmeyer, H., & Symonds, P.A., 1997. Tectonostratigraphic evolution of the Townsville basin, Townsville Trough, offshore northeastern Australia. *Australian Journal of Earth Sciences*, 44, 799-817.

*Symonds, P.A., 1997. Marine geoscience, law and the outer limit of Australia's resource zone. 1997 *Selwyn Memorial Symposium, program and abstracts*, 17-20.

*Symonds, P.A., Murphy, B., Ramsay, D., Lockwood, K., & Borissova, I., 1998.The outer limits of Australia's resource jurisdiction off Western Australia. Sedimentary basins of Western Australia 2: *Proceedings of Petroleum Exploration Society of Australia Symposium, Perth, WA*, 3-20.

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Gaina, C., Müller, D., Royer, J-Y., & Symonds, P.A., 1999.The evolution of the Louisiade Triple junction. *Journal of Geophysical Research*, 104,12973-12939.

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*Exon, N., & Symonds, P., 1999. A major program of seabed mapping off eastern Australia. *AusGeo News*, 54, 10-11.

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Sayers, J., Symonds, P.A., Direen, N.G., & Bernardel, G., 2001. Nature of the continent-ocean transition on the non-volcanic rifted margin of the central Great Australian Bight. *In* Wilson R.C.L, Whitmarsh, R.B., Taylor, B. & Froitzheim, N., (eds.) *Non-volcanic rifting of Continental Margins: A Comparison of Evidence from Land and Sea, Geological Society, London, Special Publications*, 187, 51-77.

RECENT LAW OF THE SEA CONFERENCES ATTENDED
(Titles of presentations made are indicated)

1996	Conference on Geodetic Aspects of Law of the Sea, Bali (Invited; Definition of Australia's Continental Shelf: approaches and implications).
1997	AGSO FRAME Workshop, Gold Creek Homestead, Canberra Feb. 1997 (Invited; AGSO's Law of the Sea project: achievements and the future).
1997	Workshop on Marine Geoscience and the Australian Ocean Territory, Tectonics Special Research Centre, University of WA, March 1997 (Invited; Law of the Sea: what does it mean for Australia?).
1997	3rd Australian Marine Geoscience Conference, Adelaide, 30 Sept. –3 Oct. 1997 (Defining the outer limits of Australia's marine jurisdiction: implications for geoscience and resources).
1997	1997 Selwyn Memorial Symposium, Melbourne, Oct. 1997 (Invited; Marine geoscience, law and the outer limits of Australia's resource zone).
1997	Australian Marine Sciences association 1998 Conference, July, Adelaide (Invited; Marine geoscience, law and the outer limits of Australia's resource zone).
1998	'98 UNESCO Year of the Ocean in the Tasmanian & Southern Ocean context, 30 Sept.-3 Oct. 1998, Hobart (Invited; Marine geoscience, law and the outer limits of Australia's resource zone).
1999	International Conference on Technical Aspects of Maritime Boundary Delineation and Delimitation, IHB, Monaco, 1999 (A set of integrated tools based on ArcView defining the outer limit of Australia's extended continental shelf; Australia's approach to defining its extended continental shelf: progress and issues arising).
2000	Open Meeting of the Commission on the Limits of the Continental Shelf, New York, May, 2000.
2001	Continental Shelf Conference, Buenos Aires, Nov. 2000 (Invited; Defining the outer limits of Australia's continental shelf – approaches and issues).

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Education

1985	Doctor of Science in Geology, Kyushu University, Fukuoka, Japan.
1974	Bachelor of Science in Engineering, University of Tokyo.

Awards

2000	Fellow, Geological Society of America.
1987	Award for Hydrographic Technology Advancement.

Professional experience

2001-	Special Adviser to the Government of Japan on Geology and Geophysics.
1994-	Professor, Ocean Floor Geoscience Division, Ocean Research Institute, University of Tokyo.
1986-1994	Associate Professor, Ocean Floor Geoscience Division, Ocean Research Institute, University of Tokyo.
1983-1986	Senior researcher, Geological Survey of Japan, Ministry of International Trade and Industry.
1974-1983	Researcher, Geological Survey of Japan, Ministry of International Trade and Industry.

Guest positions

2000	Visiting Lecturer, China University of Geoscience, Beijing and Wuhan.
1998	Visiting Lecturer, China University of Geoscience, Beijing.
1998	Guest professor, Changchun University of Science and Technology, China.
1984-1985	Visiting researcher, University of Rhode Island Graduate School of Oceanography, United States.

International affiliations

2000-	Chair, InterRidge Programme (international mid-oceanic ridge research initiative).
1998-	Editorial Board, *Marine Geophysical Research*.
1998	Co-Chair, Ocean Drilling Program Technical Operation Workshop at Houston, Texas, United States.
1997-2000	Editorial Board, *Journal of the Geological Society of Japan*.
1997-1999	Ocean Drilling Programme (ODP) Operation Committee.

1997-1999	**ODP Science Committee.**
1996-1997	**Editorial Board, *Journal of Physics of the Earth.***
1994-1997	**Editorial Board, *Journal of Geomagnetism and Geoelectricity.***
1993-1996	**Chair, InterRide Back-arc Basin Working Group.**
1992-1998	**Editorial Board, *Tectonophysics.***
1992-1996	**InterRidge Project Steering Committee.**
1989	**Co-Chief Scientist, ODP Leg 127.**

Domestic affiliations

1998-	**Chair, Integrated Ocean Drilling Programme (IODP)/OD21 Operation and Technology National Subcommittee.**
1997-	**Chair, Long-term Cruise Planning Committee, Japan Marine Science and Technology Centre.**
1993-	**InterRidge Japan Office.**
1987-	**IODP/OD21 National Advisory Committee.**
1986-	**ODP National Advisory Committee.**

Major field experience

2000-2001	**Co-Chief, *Aden New Century* cruise, Gulf of Aden, Indian Ocean.**
2000	**Co-Chief, *Knipovich Ridge-2000* cruise, Arctic Atlantic.**
1998	**Chief, R/V *Kaiko* expedition, Japan trench.**
1997	**Chief, on-land gravity survey, Viet Nam.**
1997	**Co-Chief, *InterRidge Fuji* cruise, South-western Indian Ridge.**
1996	**Mariana Trough research cruise, R/V *Yokosuka*.**
1995	**Central Indian Ocean research cruise, R/V *Meteor*.**
1994	**South-western Indian Ridge research cruise, R/V *Hakuho-maru*.**
1993	**Co-Chief, Rodriguez Triple Junction Expedition, R/V *Hakuho-maru*.**
1989	**Co-Chief, ODP Leg 127, Japan Sea.**
1988	**Physical Property Scientist, ODP Leg 121, Ninety-east Ridge.**
1974-1985	**Intensive research by seismic reflection and magnetics, R/V *Hakurei-maru*, Western to Central Pacific.**

Research interests

Professor Tamaki has been working exclusively in the field of marine geology and geophysics, focusing on global tectonics and the dynamics of the ocean floor. His approach to this field is to cover a wide range of phenomena, from mid-oceanic ridges and hot spots to deep-sea trenches, in order to understand global ocean floor tectonics. His recent fieldwork has been concentrated on the Indian Ocean, the Arctic Atlantic Ocean and the Western Pacific seas.

Main publications

Flower, M.F.J., R.M. Russo, K. Tamaki, and N. Hoang: Mantle contamination and the Izu-Bonin-Mariana (IBM) "high-tide mark": evidence for mantle extrusion caused by Tethyan closure. Tectonophysics, 333, (1-2), pp.9-34, 2001

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German, C.R., E.T. Baker, C. Mevel, K. Tamaki, and the FUJI Science Team: Hydrothermal activity along the southwest Indian ridge. Nature 395, pp.490-493, 1998.

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Honsho, C., K. Tamaki, and H. Fujimoto: Three-dimensional magnetic and gravity studies of the Rodriguez Triple Junction in the Indian Ocean. J. Geophys.Res., Vol. 101, pp.15837-15848, 1996.

Tamaki, K., and N. Isezaki: Tectonic synthesis of the Japan Sea based on the collaboration of the Japan-USSR Monograph Project, in Geology and Geophysics of the Japan Sea (Japan-USSR Monograph Series, Vol. 1, ed. N. Isezaki, I.I. Bersenev, K. Tamaki, B.Ya.Karp, and E.P. Lelikov), pp. 483-487, Terra Scientific Publishing Company (Terrapub), 1996.

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Tamaki, K.: Geological map off Hachinohe. Geol. Surv. Japan Marine Geol. Map Ser., Vol. 10. 1978.

Naresh Kumar Thakur (India)

Date of birth: 10 July 1946.

Present position: Deputy Director, National Geophysical Research Institute, Uppal Road, Hyderabad, India 500 007

Previous positions held: Senior Scientist, National Geophysical Research Institute since 1982.

Scientist, Indian Institute of Geomagnetism, Bombay, 1973 to 1982.

Educational qualifications: Master of Science (Tech) in Geophysics, 1970, Osmania University, Hyderabad, India.

Doctorate for the thesis entitled "Geomagnetic Deep Sounding Studies in South India", 1983, Bombay University, Bombay, India.

1990-1991: Post-doctoral Fellowship of Commission on European Communities (Geosciences) for research at University of Utrecht, The Netherlands.

Professional experience: Participated in and was associated with the following programmes/investigations:

Delineation of Outer Limits of Indian Continental Shelf, and guiding the programme specifically in relation to conducting desk top studies for marine geophysical survey, and formulating the parameters of data acquisition and processing.

1998 - present: Gas-hydrate and oil and gas exploration in continental margins of India using single and multi-channel seismic data. Member of National Programme on Gas Hydrates of India since 1996.

1992-1998: Geo-scientific investigation in Bay of Bengal to delineate subsurface configuration using gravity and magnetic data sets

1988-1992: Ocean acoustic tomographic experiment for delineating long-wavelength eddies in the deep waters of India.

1982-1988: Satellite magnetic data analysis to determine the subsurface magnetic characteristics and structures under Indian subcontinent and adjoining region.

1973-1982: Geomagnetic studies in delineating the subsurface conductivity anomalies in the Southern Peninsular India.

. Participation in International programmes/training

Member of Indian Delegation to International Workshop and Bilateral Programmes (Earth Sciences) between India and Russia at Moscow. 2000.

International Workshop on Frontiers of Geophysics, Hyderabad. India. 1996.

International Seminar/Symposium on Geophysics. Hyderabad, India. 1991.

Indo-French Bilateral CNRS Programme on Earth Sciences at IPGP. France. 1989-1990.

International Workshop on Electromagnetic Studies, Hyderabad, India. 1988.

Membership of Learned Bodies

Association of Exploration Geophysicists - Member

Indian Geophysical Union - Member

Publications

N.K. Thakur, Gangadhara Rao. Ramesh Khanna, and Subrahmanyam, C., 2000, Magnetic basement in the Bay of Bengal through Werner deconvolution, Marine Geology, 162,599-605 (The Netherlands).

N.K. Thakur (with Subrahmanyam, C. et al.).1999, Tectonics of the Bay of Bengal: New insights from satellite-gravity and ship-borne geophysical data. Earth and Planetary Science Letters,171, 337-251 (The Netherlands).

N.K. Thakur. Gangadhara Rao, T.. Ramesh Khanna. Subrahmanyam, C., 1999, Current Science, 76,439-441 (India).

. N.K. Thakur, Gangadhara Rao, T., Ramesh Khanna, and Subrahmanyam, C., 1999 Crossover analysis of Geophysical data in Bay of Bengal. Geo-Marine Letters., 19, 262-269 (Germany).

N.K. Thakur. Ramesh Khanna, Subrahmanyam, C., and Gangadhara Rao, T., 1999, Resolving source parameters through psuedo potential anomalies, Journal of Geodynamics. 27, 89-95 (United Kingdom).

N.K. Thakur (with Subrahmanyam, C. et al.), 1998, Gas Hydrate- A synoptic view, Journal Geological Society of India., 52, 497-512(India).

N.K. Thakur (with Hanumantha Rao et al.), 1998, Potential distribution of methane along the Indian continental margins, Current Science. 74, 465-468(India).

N.K. Thakur, Ramesh Khanna and Joshi, M.S., 1998, On approximate modelling of Long wavelength magnetic anomalies, Acta. Geophysica Polonica, 1, 69-76 (Poland).

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N.K. Thakur, Joshi, M.S., (1991), Seismic Tomography: Towards a better model resolution, Proceedings of International seminar: Geophysics beyond 1990s. 629-636, (India).

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Date of birth: 8 September 1947.

Present position

Director, Geological Survey and Mines Bureau, Sri Lanka.

Academic qualifications

Ph.D. in Marine Geochemistry, Imperial College, University of London (1991).

Postgraduate Diploma in Mining Exploration Geology, I.T.C., Delft, The Netherlands (1979).

B.Sc. (Hons.) Geology, University of Peradeniya, Sri Lanka (1972).

Participation in international scientific cruises

R/V Condrad (United States of America) 19 June-5 July 1986, Colombo-Central Indian Ocean-Colombo.

R/V Meteor (Germany) 22 June-1 July 1987, Madagascar to Mombasa (Kenya).

D/V Joides Resolution (Ocean Drilling Programme) Leg 116, 5 July-19 August 1987, Colombo-Indian Ocean-Colombo, as an on-board sedimentologist.

R/V Sonne (Germany) 9-22 January 1994, Colombo-Central Indian Ocean-Trincomalee.

Summary of experience and positions held

Director, Geological Survey and Mines Bureau, Sri Lanka, 1993-present.

National Aquatic Resources Agency (NARA), Crow Island, Colombo, Acting Director/ Officer In Charge / Marine Geologist, Oceanography Division, 1984-1993.

State Mining and Mineral Development Corporation, Colombo 8: Mine Geologist, Graphite Mine, Dodangaslanda, Sri Lanka, 1980-1984; Project Officer and Geologist, Mica Project, 1975-1980.

George Steuarts & Co. Ltd., Colombo, Consultant Geologist, Exploration for gem-bearing gravel deposits, 1973-1974.

University of Ceylon, Peradeniya, Sri Lanka, Temporary Assistant Lecturer in Geology, 1973 and 1974 academic years.

Academic responsibilities

External Examinerships, M.Phil.:

University of Sri Jayawardanepura, Sri Lanka.

University of Peradeniya, Sri Lanka.

Visiting Lecturer:

Postgraduate Institute of Science, University of Peradeniya, Sri Lanka, 1998, 2000 and 2001 academic years.

Department of Geology, University of Peradeniya, Sri Lanka, 1976, 1997 to 2001 academic years.

Department of Chemistry, University of Kelaniya, Sri Lanka, 1997 to 2000 academic years.

Department of Zoology, University of Kelaniya, Sri Lanka, 2002 academic year.

Other affiliations and responsibilities

Chairman of the Technical Committee on Law of the Sea (Continental Shelf), Sri Lanka, 2000 to date.

Member of the Board of Management of the Geological Survey and Mines Bureau, Sri Lanka, 1993 to date.

Member of the Board of Management of the Postgraduate Institute of Science, University of Peradeniya, Sri Lanka, 1996 to date.

Member of the Board of Management of the National Aquatic Resources Agency (NARA), Ministry of Fisheries and Ocean Resources, Sri Lanka, 1997 to date.

Member of the Board of Management of the National Gems and Jewellery Authority, Sri Lanka, 1996-1999.

Member of the Board of Management of Lanka Mineral Sands Limited, Sri Lanka, 2000.

Member, Working Committee on Chemical and Earth Science, National Science Foundation, Sri Lanka, 1999 to date.

Member, Steering Committee on Natural Sciences, National Science Foundation, Sri Lanka, 1997-1998.

Member, Steering Committee on Physical, Engineering, Mathematical Science and Building Environment, National Science Foundation, 1993-1996.

Deputy Secretary General of the Second South Asia Geological Congress, 1995.

President of the Geological Society of Sri Lanka, 1994/95.

President Section D Sri Lanka Association for the Advancement of Science, 1995.

Consultant, United Nations Revolving Fund, Offshore Monazite Project, Beruwala, Sri Lanka, 1997.

Other qualifications

Participated in the Class A Training Programme, International Ocean Institute, Malta and Germany.

Participated in the course on near-shore non-fuel mineral exploration conducted by the International Centre for Ocean Development, Mombasa, Kenya.

Participated in the course on marine mineral resources held at Imperial College, London.

Participated in the course on bathymetric charting in the Western Indian Ocean held at Nosy-Be, Madagascar, organized by the Centre National de la Recherche Oceanographique.

Pass in the Preliminary Exam. of the Institute of Chartered Accountants, Sri Lanka.

PUBLICATIONS

Ph.D. THESIS

Geochemical Investigations on some sediments from the Eastern Indian Ocean. Imperial College, University of London — 1991.

FULL PAPER PUBLICATIONS AND BOOKS

J R Curray and **N P Wijayananda** (2000), Conversion of Seismic Reflection Travel Times to Depth, Bay of Bengal, J. of the Geological Society of Sri Lanka, V. 9, p. 63 – 65.

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Profession: Mines Engineer, Geophysicist

University education

1975-1981: Institute of Mines and Geology of Leningrad (USSR). Major: Geophysical methods in the exploration and mining of useful minerals. Degree of Mines Engineer-Geophysicist (Master of Science in Geophysics)

Spoken and written languages

French, English, Russian.

Current functions

1995-2002: Head of the Hydrogeology, Geophysics and Survey Division of the General Department of Mines and Geology, Lomé. Activities: Design and execution of programmes of work; personnel management (three engineers, two survey teams for hydrological and mineral drilling, one geophysical team); management of geophysical surveying equipment and materials.

Post graduate training

September-December 1983: Training in geophysical instrumentation at Scintrex, Toronto, Canada.

February-March 1987: Specialization in gravimetric prospection at INSTP, Yamoussoukro, Côte d'Ivoire.

August-October 1998: Training in petroleum policing at the General Department of Mines and Geology, Stanvager, Norway.

Professional experience

November-December 1998: National delegate to the offshore seismic refraction (3D) study mission of Togo (petroleum exploration) by Petroleum Geophysics Service (PGS), a Norwegian company.

October-November 1995: Testing to improve geophysical methods of installing water outlets in the prefectures of the Ogou and Kloto in the context of village hydraulics (UNICEF project).

April-June 1991: Prospecting for polymetallic sulphide deposits at Pagala and for gold at Aleheride, Togo, OTP/Nigeria/BRGM (France).

April-May 1990: Hydrogeological prospecting at Pagala, village for Nouvelle SOTOMA.

March 1989: Hydrogeological prospecting at Agomé-yo (Kpalimé) for Société Industrielle de Parfumerie (SIP).

November-December 1987: Gravimetric prospecting in the coastal basin (petroleum exploration) with Geoterrex of Canada.

1987: Prospecting for phosphates in Bassar. OTP/Nigeria/BRGM (France) project.

May 1986: Hydrogeological prospecting at Pagala (Sokode) for the Société d'Exploitation de Sources Togolaises d'Eau Minerale (SESTEM), a company in the course of being established.

1985: Prospecting for polymetallic sulphide deposits at Pagala, General Department of Mines and Geology.

1982-1985: Hydrogeological prospecting using geophysical methods within the framework of the project "Strategy for the development of Togolese water resources" (hydrogeological reconnaissance between latitudes 7° and 9° north), UNDP.

December 1984: Follow-up to offshore drilling along the coast off Lomé (petroleum exploration) by Geophysical Service Incorporated (GSI) of Canada.

Other activities

Member of the Association of Exploration and Research Geophysicists of Africa (AGERA)

Member of the Togolese Association for Scientific Research (ATRS).
